Public Works (1910) Department.

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G.O., No. 282-I

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The Notes
in this G.O. have been printed.

[Despatch Abstract.]

Overflow of water from the Periyar Lake

Approving, with remarks, certain rules for the working of the Periyar regulator and sanctioning the payment of Rs. 3,043 as compensation for loss of property in the Travancore territory caused by the —— in October 1909.

DO/Dr
Dr
9/9

Indexed.

F. W. 2.
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BACK PAPERS.

Department.	Date.	G.O.	No.	Department.

செப்பனிடுபவர் பெயர்
A. குணசேகரன்

செப்பனிடுவதற்காக எடுத்துக்
கொள்ளப்பட்ட நாள் ஜனவரி/99.

செப்பனிட்டு முடித்த நாள் பிப்ரவரி/99.

சரிபார்க்கும்
மு. பணியாளர்
கையொப்பம்

ஆராய்ச்சி
உதவியாளர்
கையொப்பம்

2

Government of Madras.

PUBLIC WORKS DEPARTMENT.

IRRIGATION.
ACCOUNT.

Recd. } 1910. *Enclosures*

Regd. *Spare copies*

G.O., No. 282 I., 3rd September 1910.

Overflow of water from the Periyar Lake.

Approving, with remarks, certain rules for the working of the Periyár regulator and sanctioning the payment of Rs. 3,043 as compensation for loss of property in the Travancore territory caused by the — in October 1907.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Account.

Read—the following papers:—

I

Letter—from R. C. C. Carr, Esq., I.C.S., Acting Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Trivandrum, the 8th November 1907.
No.—R.O.C. 2050.

I have the honour to submit that Mr. Vernede, District Magistrate, Cardamom Hills, has reported to the Travancore Darbar under date the 2nd of November 1907, as follows regarding the overflow of water from the Periyar lake:—

"I have received information that owing to the sudden raising of the sluice gates of the Periyar lake, a large quantity of water was suddenly let out raising the water level at Vandi Periyar to about 7 feet above normal, with the result that several carts and loads of tea and rice which had been on the banks at the time were washed away; one man higher up the stream was caught by the water and drowned and several had narrow escapes. I shall submit full report on receipt of details. Mr. Kenyon has gone to the spot to institute the necessary enquiries."

2. I will submit a further report on hearing from the Diwan again. I learn from other sources that the flood was 3 feet above anything previously recorded. It is obviously desirable that notice should, if possible, be given before such a huge body of water is let down the river.

II

Letter—from R. C. C. Carr, Esq., I.C.S., Acting Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Trivandrum, the 23rd November 1907.
No.—R.O.C. 2050.

In continuation of my letter R.O.C. No. 2050, dated 8th instant, regarding the surplus water let down from the Periyar lake, I have the honour to submit that Mr. Kenyon, Special Magistrate, Peermade, and Assistant to the District Magistrate, Cardamom Hills, who proceeded to the spot to enquire into the matter, reports as follows:—

"On the 28th instant when the level was 151·65 feet and slowly rising, orders were received at Thekkady from the Executive Engineer of Madura district to open some of the new sluices. I understand that this was as much to test the working of the sluice gates as to lower the level of the lake to a safe point.

"Accordingly the sluice superintendent proceeded to the dam and at about 2 P.M. commenced to open the gate.

"There are in the new works, 10 gates, with 36 feet vents opening up to 16 feet, but on this occassion, only four were opened to 6 feet and it was 4-30 P.M. before they were so opened.

"This, of course, threw a large volume of water into the Periyar river, but no notice or warning of any kind was issued and the result of the flooding at Vandi Periyar is best described by the Public Works Department Overseer in charge of bridge works there.

"He states that about 5-15 P.M. when in his quarters about 50 yards from the river bank, he heard a roaring noise. Running out towards the end of the bridge, he saw on looking up the river a bank of water rushing down. On both banks there were carts, some that had just crossed in the jungar and some waiting to cross, with their bulls, unyoked, though tied to the poles. Shouting out to warn the people, the overseer says he ran to the carts on the east bank while Mr. Thomas, the Sub-Divisional Public Works officer of Peermade, crossed the bridge and went to the landing place on the western side. The water soon rose to such a height that the bulls, hastily yoked up, could not pull the carts away, and it was found necessary to cut the animals loose and let them save themselves. With ropes some carts were dragged out, but in spite of all endeavours, some nine were washed away, some, I believe, being found smashed up three miles down the stream.

"One cooly is reported to have been drowned at the Mount estate and there were many wonderful escapes, notably a boat load of coolies crossing from the Injikadu estate who only reached the shore just in time.

"The level of the river at the bridge rose about 7 feet, while higher up, near the Arnakal clearings, Mr. Holder tells me he thinks it must have been about 18 feet."

2. According to the latest information some sawn timber from Arnakal estate was carried away, and Mannan's creek bridge was badly damaged. Twenty-five chests of tea, 34 bags of rice, 6 bandy loads of foodstuffs, 9 carts and 100 yards of stacked fire-wood at Manjamallay Vandi Periyár were also washed away, but some of the tea chests appear to have been recovered.

3. The Darbar point out that the sudden discharge of water from the lake will affect almost all the stations on the banks of the Periyár river, more especially Vandi Periyár, a place of some traffic about six miles below the dam. Timely notice of the letting down of water is essential and the Darbar suggest the opening of a Telegraph office at Vandi Periyár where there is already a branch Post office. The planters also desire this. I submit that a combined Post and Telegraph office at Vandi Periyár would doubtless be an administrative convenience. The telegraph wires from Kumili to Peermade pass over this place so that a Telegraph office can easily be located there.

III

To the Superintending Engineer, VI Circle, dated 7th December 1907, No. 4926.

IV

From the Superintending Engineer, VI Circle, dated 14th December 1907, No. 6-C.E.

V

Memorandum No. 1929-3, Political, dated 2nd January 1908.

With reference to his letters R.O.C. No. 2050, dated the 8th and 20th November 1907, regarding the overflow of water from the Periyár lake, the Resident in Travancore and Cochin is requested to be so good as to ascertain and communicate direct to the Superintending Engineer, VI Circle, the name and designation of the Travancore official with whom the Superintending Engineer should confer or correspond in regard to the arrangements to be made for preventing accidents of the kind reported in future. The Resident is also requested to move the Travancore Darbar to have an inquiry made into the alleged losses by the flood. It should be understood that in desiring that this inquiry should be made the Government assume no responsibility for losses caused by this accident.

H. BRADLEY,
Chief Secretary.

To the Resident in Travancore and Cochin.

VI

From the Superintending Engineer, VI Circle, dated 15th February 1908, No. 92-C.E.

VII

Memorandum No. 423-2, Political, dated 18th March 1908.

The attention of the Resident in Travancore and Cochin is invited to Memorandum No. 1929-3, Political, dated the 2nd January 1908, and he is requested to be so good as to report at an early date the result of the enquiry which the Travancore Darbar was requested to make into the alleged losses by the overflow of water from the Periyár lake in October 1907.

2. The Resident is also requested to ascertain whether the Darbar have any objection to the issue of the following rules for the prevention of such accidents in future:—

(1) As soon as the level of the lake rises to + 150 the Dam Superintendent shall inform * . . . . . . at Vandi Periyár and † . . . . . that the river is liable to be in heavy flood at any moment.

* Here enter designation of officer.

† Any other places the Travancore Darbar may wish.

(2) The Dam Superintendent shall telegraph to . . . . at Vandi Periyár whenever it is necessary to open the regulator.

(3) The regulator shall be opened whenever the water level rises above + 152 and to such an extent as will keep the lake from rising more than three inches above that level.

(4) Under ordinary circumstances the gates shall be raised gradually one foot in the first hour, another foot in the second hour, and so on.

(5) All gates shall, as a rule, be raised equally one foot at a time.

(6) Should the water level in the lake rise to + 153 when the gates [illegible] being regulated as directed in rule (4) the shutters must be raised as rapidly a[illegible] possible after the regulator has been discharging with the vents open one foot for one hour and kept open until the lake falls to + 152.

(7) When such sudden opening is necessary an urgent telegram shall be sent to . . . . . at Vandi Periyár to say that dangerous floods are coming.

3. The Resident should, after communication with the Darbar and the Superintending Engineer, intimate to Government the designations of the officers at Vandi Periyár and other places to whom the information referred to in rule (1) should be supplied and the telegraphic intimation referred to in rules (2) and (7) should be sent.

4. While the rules proposed above are intended for the guidance of the Dam Superintendent, the Executive Engineer and Sub-Divisional Officer will have power to modify them at their discretion. The Travancore authorities are expected to issue a warning regarding the danger of halting in or near the river bed between June and January.

J. N. ATKINSON,
Chief Secretary.

To the Resident in Travancore and Cochin.

VIII

Letter—from R. C. C. CARR, Esq., I.C.S., British Resident in Travancore and Cochin.
To—the Superintending Engineer, Periyár Works.
Dated—the 28th March 1908.
No.—R.O.C. 2050 of 1907.

I have the honour to forward, for your information, copy of my letter to the Diwan of Travancore regarding the adoption of certain rules to prevent accidents in future from the overflow of water from the Periyár lake. I request that you will be so good as to inform me whether you have any suggestions to make in the matter. An early reply is requested.

Enclosure.

Letter—from R. C. C. Carr, Esq., I.C.S., British Resident in Travancore and Cochin.
To—the Diwan of Travancore.
Dated—the 28th March 1908.
No.—R.O.C. 2050 of 1907.

With reference to the correspondence ending with your letter No. 2359-P.W., dated 25th March 1908, regarding the overflow of water from the Periyár lake, I have the honour, at the instance of my Government, to enquire whether the Darbar have any objection to the issue of the following rules for the prevention of such accidents in future :—

(1) As soon as the level of the lake rises to + 150, the Dam Superintendent shall inform (*a*) . . . . at Vandi Periyár and (*b*) . . . . that the river is liable to be in heavy flood at any moment.

(*a* Here enter designation of officer.
(*b*) Any other place which the Travancore Darbar may wish.

(2) The Dam Superintendent shall telegraph to . . . . at Vandi Periyár whenever it is necessary to open the regulator.

(3) The regulator shall be opened whenever the water level rises above + 152 and to such an extent as will keep the lake from rising more than three inches above that level.

(4) Under ordinary circumstances the gates shall be raised gradually one foot in the first hour, another foot in the second hour, and so on.

(5) All gates shall, as a rule, be raised equally one foot at a time.

(6) Should the water level in the lake rise to + 153 when the gates are being regulated as directed in rule (4) the shutters must be raised as rapidly as possible after the regulator has been discharging with the vents open one foot for one hour and kept open until the lake falls to + 152.

(7) When such sudden opening is necessary an urgent telegram shall be sent to . . . . . at Vandi Periyár to say that dangerous floods are coming.

2. While the rules proposed above are intended for the guidance of the Dam Superintendent, the Executive Engineer and the Sub-Divisional officer will have power to modify them at their discretion I request that the Darbar will also instruct its officers to issue a warning regarding the danger of halting in or near the river bed between June and January.

3. I request that you will be so good as to inform me of the official designation of the Darbar officers at Vandi Periyár and other places to whom the information referred to in rule (1) should be supplied and the telegraphic information referred to in rules (2) and (7) should be sent.

No. 202-C.E., dated 14th April 1908.

Copy forwarded to the Chief Engineer for Irrigation for information in continuation of this office No. 92-C.E., dated 15th February 1908, in which certain rules were suggested. I approve of the rules sent by the Resident and have informed him accordingly.

J. H. Medlicott,
Superintending Engineer, VI Circle.

IX

Letter—from L. Davidson, Esq., I.C.S., Acting Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Camp Alwaye, the 5th July 1908.
No.—R.O.C. 1141.

With advertence to Mr. Souter's Memorandum No. 423-2, dated 18th March 1908, I have the honour to submit the following intermediate report regarding the losses caused in the Travancore State by the overflow of water from the Periyar lake in October 1907 and the views of the Darbar as to the proposed issue of rules designed to prevent similar accidents in the future.

2. The enquiries of the Darbar go to show that the losses sustained by planters aggregate Rs. 1,442 and those falling on the State Rs. 123, but the papers show that these figures do not include all the damage brought to notice, and I am therefore requesting the Diwan to furnish me with farther information on the subject.

3. As to the proposed rules I have received the following lengthy criticism from the Darbar based upon a report written by their Chief Engineer, Mr. Bastow, an extract from which is enclosed for reference if desired :—

"Mr. Bastow observes that, while the old escape was an open one and was designed not to hold up any water so as to cause danger of sudden floods, the new regulator has been so built as to hold up the water over an area of about 7,000 acres to a height of 16 feet, *i.e.*, about 4,400 million c. feet of water. It is apprehended that, if this tremendous volume of water escapes or is let off, it would devastate the whole of the Periyár valley, causing serious loss of life and property. The danger is very probable, and might have happened in November last, had only all the ten shutters been opened simultaneously.

"The rules proposed by the Madras Government could hardly obviate the danger alluded to above. It seems to be beyond the power of a single officer or of a number of officers to guard adequately against the loss of life and property down the flooded river, when the shutters are opened.

"Though under article 3 of the agreement, the British Government appear to have the full right to construct within the tract mentioned in article II thereof, such works as they may deem necessary for the storage of water, yet the Darbar hoped that it would have been consulted before any material alterations were made in the existing works, such as would endanger the life and property of its subjects. The construction of the new regulator and the proposed demolition of the crest wall in front of the old regulator involve material alteration of the conditions in the Periyár valley below and the Darbar feels apprehensive for the safety of the inhabitants of the valley.

"The Chief Engineer thinks that the new regulator should not be used, or if at all, not without affording adequate protection to life and property in the tracts in Travancore which would be prejudicially affected by the overflow of water. He also thinks that the crest wall in front of the new lift shutter should be allowed to remain, so that even if the shutters were raised, the condition of an open escape with crest level at R.L. 144 would still be maintained. The Darbar agrees with the views of its Chief Engineer."

4. Mr. Bastow himself attached so much importance to the crest wall in front of the new regulator that he wrote direct to the Chief Engineer for Irrigation, Madras in a letter, dated 19th April 1908, No. C/72, suggesting that the removal of this structure should be stopped pending consideration of the objections likely to be raised by the Darbar.

5. I find it difficult to reconcile the present attitude of the Darbar and their Chief Engineer with that taken up when the regulator was under construction. Complaint was then made that the British authorities had failed to consult the Darbar with regard to the scheme, but when Mr. Bastow subsequently visited the Periyár and examined the plans, he wrote of the project in these terms.

"On the work I was shown the working drawings and find that the regulating works will take the form of series of stoney lift-shutters, a type which is perfectly satisfactory and should prevent their surplus rising too quickly into the Periyár river. I am therefore satisfied that the design is all that we could ask for, in fact, the best and most up-to-date type of escape." The Diwan himself when forwarding Mr. Bastow's letter implicitly withdrew all objections to the execution of the work with the remark that the escape shutters appeared to be properly designed. I am drawing the attention of the Darbar to the change in their attitude and will in due course submit to Government any further statement that may reach me on the subject.

6. I have not visited the Periyár works and am not in a position to express any opinion as to the extent of risk involved by the construction and use of the new shutters, but there is one point which naturally strikes a non-professional mind, and that is the extreme importance of securing that a thoroughly trustworthy and competent officer shall always be on the spot to carry out the necessary regulation in time of flood. The loss caused by a small and gradual escape in November last gives some idea of the enormous damage to life and property which might result from

any sudden lifting of the shutters. The circumstances suggest to the layman the analogy of the lighthouse and the two light-keepers who are always in residence in order that one may replace the other in case of sudden-sickness.

X

Official Memorandum No. 137 O., dated 4th August 1908.

With reference to his letter R.O.C. No. 1141, dated 5th July 1908, addressed to the Chief Secretary to Government, regarding the new regulator at the site of the Periyar right bank escape, the Resident in Travancore and Cochin is informed that there appears to be some misapprehension on the part of the Travancore officers as to the objects of the new regulator as well as to the way in which those objects are expected to be attained.

A copy of G.O., No. 1125 I., dated 13th October 1904, is enclosed for information in which the report accompanying the sanctioned estimate is printed and which clearly explains the objects of the work.

It will be seen that the origin of the proposed regulator was the fear that owing to the original length of escape proposed for the reservoir having been decreased from 920 feet to 435 feet by the omission of the left bank escape the reservoir dam itself might be endangered by a flood equal to that recorded in 1869 on which occasion a discharge of no less than 127,000 cusecs was gauged at the site of dam.

It will therefore be seen that the primary object of the new work was to ensure the safety of the dam.

The second object was the increase of storage capacity which it may be remarked will have the effect of reducing the average amount of surplus water passed into the Periyar river and the lake will therefore hereafter surplus even less often than has hitherto been the case.

As regards the effect of the new work on the flood discharges I enclose a table showing its probable working in a flood like that of 1869 which may be compared with that given on page 96 of the Periyar History by Mr. A. T. Mackenzie and from which it will be seen that the maximum discharge expected to be passed by the new work at any time will be 83,712 cusecs as against 86,400 cusecs as calculated to be discharged by two escapes as originally designed.

It will be observed that the effect of the reservoir as a flood moderator is to reduce the maximum discharge of the 1869 flood from 127,000 cusecs to 83,712 cusecs.

As regards the proposed rules it will be seen from the table now sent that it is now only proposed to gradually open the sluice 6 inches in the first hour and 6 inches in the second hour, the effect of which will be a discharge at end of first hour of about 3,600 cusecs which at the Vandi Periyar bridge will probably give an average depth of not more than 2 feet.

This should be sufficient to give warning along the river of the possible approach of a flood and the subsequent more rapid opening of the shutters should cause no risk to any one. It may be pointed out that before the construction of the reservoir the floods in the river used to come down more rapidly than the above as can be proved by the records maintained at the dam site during construction and the residents in the Periyar valley have evidently ceased to look out for floods owing to their much less frequent occurrence.

As regards the appointment of a competent officer to superintend the working of the regulator, the necessity for this has already been recognised and arrangements made accordingly.

In conclusion, it will be observed that the design of the new work cannot be said to be in any way more unfavourable to Travancore than that of the old escape, and it is believed that the rules proposed will ensure its being worked in such a way as to give no cause for anxiety.

C. A. SMITH,
Chief Engineer for Irrigation.

Enclosure.

Revised calculations of flood discharges through the new regulator corresponding to the maximum recorded flood of November 1869.

Level of lake surface.	Discharge from lake.			Discharge of river per hour.	Stored in lake per hour.	Contents of lake.	Time occupied in filling.	Total duration.
	Tunnel.	Escape.	Total.					
Feet above datum.	Millions of cubic feet per hour.				Millions of cubic feet.	—	Hours.	Hours.
152–152·5	6	6·5	12·5*	105	92·5	15,662 15,755	1	..
152·5	6	18·8	24·8	118	93·2	15,848	1	..
152·5–153·5	6	83·5	89·5	315	225·5	16,074	1	..
154	6	177	183	315	132	16,206	1	..
154	6	276	282	315	33	16,239	1	..
	6	276	282	531	249	16,488	1	..
155	6	284	290	516	226	16,714	1	..
155·5	6	293	299	457	158	16,872	1	..
155·5	6	301†	307	309	2	16,874	1	..

* Half the shutters raised 1 foot in first and 2 feet in second hour.

† = 83,712 cusecs.

When the shutters are partially opened, discharges are calculated with formula $D = CL\,(h_2 - h)\,\sqrt{2gh}$ where h_2 and h = the heads to bottom and top of the orifice respectively, and $C = \frac{5}{8}$.

When the shutters are fully opened, the discharges are calculated with formula $D = CL\,\sqrt{2gh}\,\left(h_2 - \frac{h}{3}\right)$ where

h_2 = the head to the bottom of the notch,
h = the difference of level between the water surfaces,
C = ·8.

XI

Letter—from R. C. C. Carr, Esq., I.C.S., Officiating Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Trivandram, the 16th April 1909.
No.—R. O. C. 1083.

With reference to official memorandum No. 1929–1, dated 2nd January 1908, and in continuation of Mr. Davidson's letter, R.O.C., No. 1141, dated 5th July 1908, I have the honour to report that the losses caused by the overflow of water from the Periyár lake are estimated as follows :—

	RS.
(i) Travancore Tea Estates and Company, Kolikanam estate, 24 chests of broken pekoe 2,784 lb. at 8 *d.* per lb., valued at	1,392
(ii) Arnakal estate, H. S. Holder, Esq., damages done to nurseries.	50
(iii) Damage caused to 5,460 lb. cardamoms belonging to the Satharangapara estate, Cardamom Hills Planters' Association.	1,365
(iv) Rice and other articles and carts belonging to the above association.	1,755
(v) Loss to the Darbar	123
Total ..	4,685

2. The figures for Satharangapara estate were furnished to me a few days ago by the Diwan, and the items are based on information given by the Honorary Secretary to the Cardamom Hills Planters' Association. The details of the item, Rs. 1,755, are not given, and I am asking the Diwan to have further inquiries made. The total that I now report may be taken as the total claim for losses due to the overflow.

3. I request instructions as to whether any of these claims are to be admitted as against the British Government. I think there is no doubt that the losses have been fairly estimated. But I will in due course submit a further report regarding the item Rs. 17,55.

4. The substance of the official memorandum No. 137-O., dated 4th August 1908, Public Works (Irrigation) Department, was communicated to the Darbar; and the Diwan asked that his reply, if any, might be postponed until return from leave of Mr. Bastow, the Chief Engineer. The Acting Chief Engineer, Mr. Jacob, is ignorant of the locality, and the Darbar desires to have the views of its permanent Chief Engineer for reply. Mr. Bastow returns from leave at the end of May.

XII

Cur. No. 85-O., dated 14th June 1909.

The attention of the Superintending Engineer, VI Circle, is drawn to the correspondence ending with his endorsement No. 202,-C.E., dated 14th April 1908, regarding the accident at the Vandi Periyár in October 1907, and he is requested to report in consultation with the local officers, if necessary, where the carts which were carried away actually were at the time of the accident. In letter No. 838-S.E., dated 30th November 1907, of the Executive Engineer, Madura division, received with the Superintending Engineer's letter No. 6-C.E., dated 14th December 1907, it was stated that the carts "had been left in the bed of the river while the cartmen went to cook their food". In his letter, R.O.C., No. 2050, dated 8th November 1907, communicated to the Superintending Engineer with Memorandum No. 4926, dated 7th December 1907, the Resident in Travancore and Cochin, however, stated that the carts were on both the banks.

2. It is within the recollection of the undersigned that there was originally a timber bridge carrying the road from Kumili to Peermaad across the Periyar at Vandi Periyár, and that since this bridge was washed away some years ago, the traffic crossed the Periyár close to the old bridge by means of ramps on either side. It is thought that carts are in the habit of stopping on the ramps at different levels according to the depth of water in the river and they also stop there even when the river is quite low while the cartmen take their meals. It is therefore presumed that on the 28th October 1907 the cartmen were stopping low down on the river margin, as the river was then probably almost empty. The Superintending Engineer is requested to make inquiries and if possible furnish definite information on the point.

C. A. Smith,
Chief Engineer.

To the Superintending Engineer, VI Circle.

XIII

Letter—from R. C. C. Carr, Esq., I.C.S., Officiating Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Trivandrum, the 25th June 1909.
No.—R.O.C. 1083.

In continuation of my letter, R.O.C. No. 1083, dated 16th April last, regarding the losses caused by the overflow of the Periyár lake, I have the honour to submit details of item No. IV, Rs. 1,755, referred to therein. From the statements given before the Superintendent of the Cardamom Hills and his Assistant, the Superintendent (Mr. Vernede) reports that the claims of the rice and cart owners are reasonable and would have been preferred at once if the merchants concerned had known that there was any chance of claims being recognised. The lists and statements are submitted in original.

2. The Diwan furnishes the details of item No. V, Rs. 123, on account of damage caused to Sirkar property.

3. As regards item (iii) the damage caused to 5,460 lbs. of cardamoms belonging to the Satharangapara estate Mr. Vernede does not think that the proprietors have any claim and believes that they are prepared to withdraw the same. In these circumstances the claim may be disregarded.

4. Items (i) and (ii) ay be accepted. The total claim is then modified as below:—

	RS.
(i)	1,392
(ii)	50
(iv)	1,755
(v)	123
Total	3,320

5. I do not think that al the details of claim in No. (iv) can be admitted. I would value all carts at Rs. 4 and would exclude claims for cart-hire and for selling profit on articles lost or for c mission. With these exceptions I think the claims may be admitted. The clai uts are merchants and cartmen and not the Planters' Association as stated in my f ner list.

6. The question of the Darbar's objections to the Periyar Escape will be separately dealt with.

ENCLOSURES.

(i).

Statement of articles lost wi their prices on account of the floods caused by the opening of the sluice sh ters in Periyár on the 28th October 1907.

	RS.	A.	P.
Four cart-loads of rice sent Kambam Chekar Patcha Mohamad Rowthar to Pechat ra estate, containing 24 bags at Rs. 8-8-0 each bag	204	0	0
Three cart-loads sent by t same to Kozhi Kanam estate, containing 18 bags at Rs. -8-0 each bag	153	0	0
Profit on 42 bags of rice se by the same to Kozhi Kanam estate, containing 18 bags Rs. 8-8-0 each bag	21	0	0
Hiring to Periyár for seven r e carts	21	0	0
Forty-two sacks	10	8	0
A cart belonging to Kambam Chekar Patcha Mohamad Rowthar which carried loads of rice	60	0	0
The rice cart belonging to Kambam Churaliyandy Gowndan.	55	0	0
A rice cart belonging to Kambam Periachami	45	0	0
Rice cart belonging to Puthup i Thottapakavandar	35	0	0
Hire for taking 24 chests of te from Kozhi Kanam estate to Periyár	9	0	0
Cart belonging to Kambam Va thana Rowthar which brought chests of tea from Kozhikana	45	0	0
Blanket and other articles	3	8	0
Six bags	1	8	0
The cart belonging to Kamba Chempukkani Chetty that brought chests of tea from K ikanam	35	0	0
Six sacks	1	8	0
Total	700	0	0

	RS.	A.	P.
Two cart-loads of rice sent by K nbam Atimati Meran Pillai to the Lakshmy estate, contai ng 11 bags of rice at Rs. 9 each	99	0	0
Profit on estate containing 11 bag of rice	5	8	0
The price of one tin of jingili oil	10	0	0
The price of one tin of nim oil in t e above cart for do.	6	4	0
The cost of four blanket shawls tha were in the above cart	18	0	0
Profit on the articles bought for 34	3	4	0
The price of 11 sacks	2	12	0
The hire for two carts to Periyár	6	0	0
The price of rice cart belonging to id Meeran Pillai	45	0	0
The cart of Kamban Muhamera Pi i	50	0	0
Total	245	12	0

Statement of articles lost with their prices on account of the floods, etc.—cont.

	RS.	A.	P.
Two cart-loads of fish brought from Chengenacherry by Chinnamannoor Navanna Kadhir Maitheen Rowthar ..	150	0	0
The hire of two carts taking loads of fish from Chenganacherry	14	8	0
Two spittoons	4	0	0
Blanket	3	0	0
The amount in cash brought for paying duty	25	0	0
Ten per cent. profit on the above items, viz., Rs. 196–8–0 ..	19	10	0
Total ..	216	2	0
Cart-load of salt fish brought by Maitheen Rowthar	50	0	0
Total ..	50	0	0
Cart-load of salt fish which was brought by Kambam K. Appa Pichay Rowthar	45	0	0
Total ..	45	0	0
Fifty thulams of chilly belonging to Kambam Mahamad Mytheen Rowthar Meera Rowthar	100	0	0
Money paid by Kambam Mahamad Mytheen Rowthar Meera Rowthar to the cartman for taking the above to Kottayam.	7	0	0
Commission on Rs. 107	10	12	0
The price of the cart belonging to Kambam Mahamad Mytheen Rowthar Meera Rowthar	45	0	0
Total ..	162	12	0
Four candies of salt fish bought at Eranakulam by Kambam Vellayya Pillai at Rs. 33 a candy	132	0	0
The canoe charge at Chenganacherry	3	0	0
Hire to the three carriage from Chenganacherry to Periyár ..	21	12	0
Ten per cent. commission on Rs. 156–12–0	15	10	0
The cart belonging to Kadir Meera Rowthar	55	0	0
Total ..	227	6	0
Four tins of cocoanut oil brought by Kambam Muthoo Rowthar for the shops in Kumili	32	0	0
Eight thulams of arecanut	20	0	0
Two hundred cocoanuts	10	0	0
Ten per cent. commission on the above sum, *i.e.*, Rs. 62 ..	6	4	0
The cart belonging to Kambam Muthoo Rowthar	40	0	0
Total ..	108	4	0
Grand total ..	1,755	4	0

A. W. L. Vernede,
District Magistrate.

(ii)

Before the Assistant Superintendent, Peermade.

Deposition of Moosa Voonnan Rowthan, son of Chinna Tampi Rowthan, residing in British Kambam and a trader in Vandiperiyar, dated 23rd Meenom 1084.

I was at Vandiperiyar when, on the evening of the 28th October 1907, there was rise of water at Vandiperiyar by the raising of the sluice gates. The water rose at about 4 or 4–30 P.M. Several carts were standing on either side of that river at that time. Since water rose about 7 or 7½ feet suddenly and without any previous knowledge, the carts were washed down by the current. I cannot say for certain how many carts were thus washed away. Some of the carts were loaded and others were empty. One of the carts washed down contained the articles,

namely, cocoanut-oil, fish, soap, etc., to the value of Rs. 10-8-0 which my brother had sent to me from Pampanar. This loaded cart has not been recovered. Some have been recovered. I do not now remember the name of the owner of the cart containing the said articles of mine. My shop is close to Mr. Abraham Pillai's building on the other side (eastern side of the river). I did not submit an account of my damages since I was not till now questioned about it. It is because a notice was issued to me to appear in this office, I have presented myself and submitted these facts. Articles belonging to several others also have been lost in this rise of water. I shall be able to identify the persons if I see them. I do not know their names. It is about two years since the event occurred. I cannot, therefore, remember them clearly. I do not know the price of the cart containing my articles. It is about Rs. 45 or Rs. 50. Bullocks were not lost.

Read the deposition—correct.

Cha. Chi. Musavoonnan Rowthan.
P. P. Kuriyan,
Acting First-class Magistrate.

(Initialled.)

Asst. Supdt. and First-class Magistrate,
Cardamom Hills.

16th April 1909.

(iii)

Before the Assistant Superintendent, Peermade.

Deposition of P. K. Kuryan, Public Works Department Maistry, Vandiperiyar, dated 13*th Meenom* 1084.

I now heard read the translation of the deposition of T. S. Koilappaswami Pillai, the local Section officer regarding the rise of water at Vandi Periyár caused by the raising of the sluice gates on the evening of the 28th October 1907. I was at the spot when the water rose. Water came all at once rising to about 7 or 7½ feet. When water came thus rushing, there were, as usual, on either side of the river, carts, bullocks, cartmen and other persons. Water came down rushing while the carts were being taken to the western bank from the janghar. The janghar was also washed down by the current to a certain distance. But several persons together succeeded in stopping the janghar and tied it down. It took about Rs. 20 to repair the junghar damaged by the current. Along with this current certain wooden articles placed as support to the centre of the Periyár bridge were also washed down. I am not certain of the account of damages caused by this. Carts laden with rice, etc., and with chests of tea were also washed by this current. Not less than 10 or 16 carts were thus washed away. I do not know the details of ownership of the carts and articles. I know from the younger brother of Bavookhan of Kambam, a trader in Pambanar, that certain articles belonging to the latter were lost to him. A loud hue and cry was raised on both sides of the river when the event occurred. I myself got down ropes from the store and tied them to certain carts and dragged them on to the bank. I do not know to whom these carts belonged. I know nothing more than this. Everything stated in the deposition translation of which is read to me now is true. I shall not be able to identify the cartmen if I see them.

Read the deposition—correct.

P. K. Kuryan.

Deposed immediately—

I saw the carts laden with chests of tea belonging to the Company being washed down by the current. I am not certain of the number of carts laden with chests of tea that are lost. Among the carts washed down there were carts laden with tea chests; carts laden with bags of rice were also washed down. I cannot for certain say how many carts were washed away.

Read the deposition—correct.

P. K. Kuryan.
P. P. Kuryan,
Acting First-class Magistrate.

(Initialled.)

Asst. Supdt. and First-class Magistrate,
Cardamom Hills.

16th April 1909.

(iv)

Before the Assistant Superintendent, Peermade.

Deposition of C. P. Chandy, Public Works department store-keeper, Vandi Periyár, dated 13*th Meenom*, 1084.

I now heard read the translation of the deposition of T. S. Koilappaswami Pillai, the local Section Officer, regarding the rise of water at Vandi Periyár caused by the raising of the sluice gates on the evening of the 28th October 1907. I was at Vandi Periyar at the time of the incident. There was a sudden rise of water on the evening of that date nearly at 5 p.m. There were on both banks of the river nearly 40 bandies, some loaded, and some empty. Some of these were washed down by the water. I do not know the exact number thus washed away. I think there was no loss of bullocks. It seems that property worth nearly Rs. 30,000 was lost by

this. I do not know clearly anything about the loss. Some of the chests of tea thus washed down by this flood were recovered, and were taken to and kept on the verandah of the Public Works department Store office by the tea-maker of the Manchumala estate; most of them were damaged. Traders who were Pandikars also sustained serious loss, since rice and other provisions have been, along with the carts, washed down. I do not know their names. I shall be able to identify them if I see them. Certain wooden articles belonging to the Public Works department have also been washed down. I have no additional information on this subject.

Read the deposition--correct.

C. P. Chandy.

Again immediately deposed :—

I saw the carts being dragged up with ropes. Bullocks were untied and saved. I gave five or six ropes to drag up the carts. It is with their use that the carts were dragged on to the bank. I have seen chests of tea that were in the carts carried away with the water. These chests of tea belonged to Company's estate. I am not certain now as to the chests of tea in how many carts have been thus washed down. I am not certain either how many carts were washed down and how many saved.

Read deposition—correct.

C. P. Chandy.
P. P. Kuryan,
Acting First-class Magistrate.

(Initialled.)

16th April 1909. *Asst. Supdt. and First-class Magistrate,*
Cardamom Hills.

(v)

Cost of rectifying damages caused to the bridge by the sudden letting of water from Periyár reservoir in October and November 1907.

N.M.R. number.	Period.	Particulars.	Amount. RS.	CHS.	C.
158	12th to 18th March 1883	Cutting and removing logs of the obstructions from ventways.	2	23	8
		Do. do	7	26	0
162	19th to 25th March 1883 ..	Raising post and fitting in place of washed of post, c.ft. 22·88.	7	15	8
165	26th to 3rd February 1883 ..	Carpenters and coolies for dressing and fitting displaced wedges	4	20	0
152	10th to 16th April 1883 ..	Making a derrick for lifting post (coolies 4) ..	1	16	0
		Post damaged to site No. 2	4	0	0
		Cutting tennons and on post No. 2	6	17	8
363	2nd to 8th July 1883	Raising post number	7	7	0
		One carpenter and 4 coolies engaged for making wedges and fitting and cross beams, etc.	1	21	0
		Making a derrick arranging pulleys, etc. and scaffolding, etc.	4	0	0
661	19th to 25th July 1883	Fitting braces No. 16 including scaffolding	7	14	0
		Value of 43 c.ft. timber	32	7	0
		Value of braces washed of, r.ft. 135 × 5 × 3	14	0	0
		Do. ,, 48 × 6 × 3	6	0	0
		The cost of repairs to the janghar at the Periyár crossing.	14	19	12
		Total ..	122	19	4

K. I. Thomas,
Overseer.

L. Lysaught,
Ex. Engineer.

A. H. Bastow,
Chief Engineer.

XIV

Letter—from R. C. C. Carr, Esq., I.C.S., Officiating Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Trivandrum, the 6th July 1909.
No.—R.O.C. 1141 of 1908.

In continuation of my letter R.O.C. No. 1083, dated 25th ultimo, I have the honour to submit, for the information of Government, a copy of a letter from the Travancore Chief Engineer stating his objections to the new Periyár escape. The

Darbar apparently agrees with the views of its Chief Engineer. The arguments in favour of the new regulator set forth in official memorandum in Public Works Department (Irrigation) No. 137, dated 4th August 1908, have been duly placed before the Darbar and the memorandum is mentioned in paragraph 3 of the Travancore Chief Engineer's present letter.

2. I submit that the rules now framed for working the regulator must be rigidly enforced. Provided this is done, the Chief Engineer's objections will in a great part be met. The inhabitants of the Periyár valley are on the increase and land is being taken up in large acreages for rubber. The results of a big flood are thus year by year rendered more pregnant with disaster.

Enclosure.

Letter—from the Chief Engineer, Travancore.
To—the Chief Secretary to the Travancore Government.
Dated—the 28th May 1909.
No.—1118.

I have the honour to acknowledge your number quoted above forwarding an extract from the British Resident's letter R.O.C. No. 1141 of 5th October 1908.

2. Before discussing the matter further, I think best to deal with your second paragraph in which you point out the inconsistency between the attitude I now take in objecting to the regulator and some remarks I made in an inspection note, dated 24th November 1905. I admit the inconsistency and must express my regret that in my relief at finding out, as I had to find out for myself, that the objectionable type of falling shutters was not to be used, I was over-hasty in approving of the present regulator.

I regret the mistake; but at the same time I must ask Government to recognise that this mistake of mine has not had anything to do with deciding the type of regulator inasmuch as the design had been fixed, the shutters ordered if not supplied and the whole work had been well advanced before I wrote my inspection note, nor do I think that it has influenced the British Government in pushing on the work to completion. I submit that the British authorities having fixed on the design without reference to the Sarkar and having built the regulator in the same way, cannot refuse to listen to the Sarkar's objection on the ground that the Sirkar Engineer carelessly approved of the work when under construction.

3. Coming now to the subject of your first paragraph I have read the extract from Government memorandum No. 137-O., dated 4th August 1908, and also the Madras G.O., No. 1125 I., dated 13th October 1904, kindly sent with your No. 8641 P.W. of 20th November 1908.

It would appear from these that the design has been very carefully thought out as it affects the storage of the reservoir; but nowhere is there the slightest reference to the possibility of risk to the inhabitants of the river valley. It is almost evident that this point was neither raised nor considered.

The table showing the probable effect of the new work on the discharges during a heavy flood is interesting; but it has no bearing at all on the objections I have raised. The danger I have shown is from the suddenness and unexpectedness of the discharges. As I have shown the accident which gave rise to this discussion occurred when the regulator was opened to the most trifling extent probably not to the twentieth part of its full capacity and it is obvious that it was a mere trifle in comparison with what might have happened and might happen again.

4. But apart from this there is another aspect of the case and it is this:—

The regulator is in effect a dam holding up an enormous quantity of water—4,000 or 5,000 million cubic feet—at the head of an inhabited valley. It fulfils similar functions to those of the main dam but its fitness for the duty is very different. It is a comparatively flimsy structure. Instead of a massive monolith of a most permanent and stable type that it is possible to devise, it is a combination of narrow masonry piers and gates built of thin iron plates. The main dam might crack from top to bottom without affecting its stability but no Engineer would care to contemplate the effect of a serious crack in one of these piers. Earth tremors which would leave a masonry dam intact would wreck the regulator.

But this is not all. The regulator is a machine. The safety of the valley is dependent on the proper working of the machine; a mistaken order or a careless or incapable subordinate might bring about a disaster.

Again a child can raise or lower the gates. A mischievous person would only need an hour or so to throw them all fully open.

It must be remembered too that the risk is to be taken for all time. The regulator is not to be built to serve for a year or two. As long as the lands under the project are cultivated, water will continue to be held up to the full capacity of the regulator.

The present Engineers may be alive to the risk and their attention may be of the most unremitting order; but it is not hard to conceive that as time goes on, one of their successors may relax a little or one of the subordinates may fail in his duty, and this only needs to happen once.

5. These are the considerations that induced me to object to the use of the regulator. I think they will explain why I think that rules, however carefully devised, will not meet the case.

XV

Official Memorandum Ref. on Cur. No. 49–O, dated 14th August 1909.

With reference to the correspondence ending with his letter R.O C. No. 1141/08, dated 6th July 1909, to the Chief Secretary to Government, the Resident in Travancore and Cochin is requested to be so good as to report whether he has received a reply from the Darbar to letter R.O.C. No. 2050/07, dated 28th March 1908, addressed by him to the Diwan of Travancore regarding the officers of the State to be warned of high floods in the Periyár valley. If no reply has yet been received, the Resident is requested to remind the Darbar in the matter and to forward its reply when received.

C. A. Smith,
Chief Engineer for Irrigation.

To the Resident in Travancore and Cochin
(through the Political Department).

XVI

Letter—from R. C. C. Carr, Esq., I.C.S., Officiating Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Trivandrum, the 11th September 1909.
No.—R.O.C. 1141.

With reference to your endorsement No. 1343-1, Political, dated 16th August 1909, regarding the overflow of water from the Periyár lake, I have the honour to inform you that the Assistant Superintendent and Magistrate, Cardamom Hills, and the Public Works Department Sub-Divisional Officer, Peermad, have been nominated by the Travancore Darbar as the officials to whom intimation should be given of the proposed opening of the shutter of the dam.

XVII

Letter—from M. Brown, Esq., Executive Engineer, Madura Division.
To—the Superintending Engineer, VI Circle.
Dated—the 13th September 1909.
No.—947 S.E.

With reference to your No. 2997, dated 22nd June 1909, on Chief Engineer's Memorandum No. 85-O, dated 14th June 1909, I have the honour to forward herewith a sketch showing the site of the Vandi Periyár disaster and three statements taken from the residents of the locality who depose to their having been eye witnesses to the sudden flood and the consequent disaster. There are no village officers at the place and the man now in charge of the Post office, the only Government institution there, was not in charge at the time of the accident.

2. The statements obtained by the Supervisor would all tend to prove that all the carts carried away by the floods were left in the bed of the river and that the bandymen were not able to rescue them on account of the suddenness of the flood. The time of this sudden rise in the river is also stated to be about 5-30 P.M., the usual hour when the cartmen are busy preparing their meals. Not a single bullock was lost which would certainly have been the case if the floods had been high enough to carry away the carts said to have been standing on the banks.

3. The sketch enclosed would also show that there is no room for carts to stand anywhere else than in the bed of the river and this fact has been carefully reported upon by Supervisor M.R.Ry. S. Natesa Aiyar after a minute local inspection.

4. The statement of the Resident in Travancore and Cochin "that the carts were on both the banks" might mean that they were accommodated on either side of the deep and narrow stream there flowing.

5. As stated in paragraph 2 of Chief Engineer's Memorandum quoted above, it is true that carts generally crossed the river by means of metalled ramps a few yards below the ruined wooden bridge which has since been substituted by a new masonry structure.

6. It is not possible for carts to be left along the ramps on account of the steep gradient and as is usual in the case of unbridged roads, the bed was made use of for a cart-stand on account of the low water just before time of the disaster.

Endt. No. 772-C.E., dated 19th September 1909.

Forwarded to the Chief Engineer for Irrigation, for information, with reference to his C. No. 85-O., dated 14th June 1909.

H. E. Clerk,
Superintending Engineer, VI Circle.

XVIII

Official Memorandum No. R.O.C. 2068/09, dated 16th January 1910.

With reference to his letter R.O.C. No. 1141, dated 6th July 1909, the accompanying copy of a note by the Chief Engineer for Irrigation, in reply to the letter from the Chief Engineer, Travancore, is forwarded to the Resident in Travancore and Cochin for information.

2. The Government agree with the opinions expressed by the Chief Engineer for Irrigation, and consider that the proposed rules should ensure sufficient warning to guard against people being taken unawares when crossing the river or working on its low margins. At the same time, as there must always be risk of sudden floods in a river like the Periyár, it is desirable that the Travancore Darbar should take steps to warn the inhabitants of the Periyár valley of the danger of being within the limits of possible floods during the monsoon season, *i.e.*, from June to January.

3. While His Excellency the Governor in Council cannot admit any liability for losses caused by the flood of October 1907, he is prepared, as a matter of grace and entirely without prejudice, to reimburse the parties concerned to the following extent :—

	RS.
(i) Travancore tea estates	1,392
(ii) Loss of carts, rice, etc. (modified with reference to paragraph 5 of the Resident's letter, R.O.C. No. 1083, dated 25th June 1909).	1,528
(iii) Loss to the Darbar	123
Total ..	3,043

4. It is hoped that the Darbar will now see their way to accept the draft rules proposed for the working of the escape.

C. A. Smith,
Chief Engineer for Irrigation.

To the Resident in Travancore and Cochin
(through the Political Department).

Enclosure.

Note by the Chief Engineer for Irrigation.

The Chief Engineer for Irrigation has the following remarks to make on the letter No. 1118, dated 28th May 1909, from the Chief Engineer, Travancore.

2. *Travancore Chief Engineer's paragraph* 3.—As already pointed out in the Chief Engineer's Memorandum No. 1376, dated 4th August 1908, the primary object of the new escape is the increase in surplussing power which the late Inspector-General of Irrigation Sir T. Higham considered necessary for the safety of the main dam.

It was originally proposed by Sir T. Higham to provide falling shutters without any additional storage, *i.e.*, without any raising of full lake level, the additional escape power required being given by lowering the weir crest. Subsequently the necessity for increased storage was established and the present surplus weir provides both for increased storage and increased escape power. It need hardly be pointed out that the present arrangement is less likely to cause sudden floods than falling shutters, as the latter fall suddenly and sometimes the whole of the shutters would fall simultaneously.

3. *Travancore Chief Engineer's paragraph* 3.—As regards risk to the inhabitants of the valley, it is pointed out that the general effect of the Periyár works has been to decrease both the frequency and the intensity of floods, and as the surplus water is merely passed into the old natural river channel, it was not necessary nor is it usual when designing storage works to specially consider the effect of floods which cannot be made of greater maximum intensity than before the construction of the reservoir, and as a rule are of very much less intensity.

It is open to question whether, under the old natural conditions of the Periyár river, the cartmen would have halted in the river bed during the flood season; but in any case people who halt in the bed of a torrential river like the Periyár must do so at their own risk. The proposed rules should be sufficient to ensure sufficient warning of the approach of a flood and people who disregard this warning must take the consequence and it is hoped that the Travancore Darbar will take steps to impress this upon the inhabitants of the Periyár valley.

4. *Travancore Chief Engineer's paragraph* 4.—The escape has been designed with lift shutters of the latest type by Messrs. Ransomes & Rapier who make a speciality of these shutters and the masonry work has been designed to carry the shutters with safety.

It is necessary to point out again that the escape is primarily intended for the safety of the main dam and even if the escape were to be carried away by an extraordinary flood or an earthquake, it would be preferable to the failure of the dam itself.

Even when the escape shutters are fully opened or if the escape were to be carried away the maximum possible discharge would, as has been previously pointed out, be less than the calculated maximum flood discharge of 1869.

5. As already pointed out floods have been few and far between since the dam was built and even when they have occurred have risen more or less gradually, the discharge over the old flush escape having increased gradually with the increase of the level in the lake and the consequent increase in the depth discharging over the escape.

In future the escape shutters will not as a rule be opened until the lake fills up to + 152·0 which is now the F.T.L. and in consequence the rate of increase of the flood discharge from the time of first opening the escape till it reaches the maximum may be rather more rapid than with the old flush escape; but the ultimate maximum intensity will be much the same in both cases.

There is no reason to suppose that the Engineers of the future will be any less alive to their responsibilities than those of the present and the risk run by the inhabitants of the valley is now considerably less than was the case before the surplussing capacity of the works was increased by the construction of the present escape.

C. A. SMITH,
Chief Engineer for Irrigation.

XIX

Letter—from R. C. C. CARR, Esq., I.C.S., Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Trivandrum, the 26th April 1910.
No.—R.O.C. 1083 of 1908.

With reference to Official Memorandum No. R.O.C. 2068 in the Public Works Department forwarded with your endorsement No. 270-I, Political, dated 10th February last, I have the honour to inform you that the Travancore Darbar has accepted the sum of Rs. 3,043 as the amount of compensation for the losses caused by the overflow of water from the Periyár lake. I request that orders may be issued in the Financial department for the payment of this amount to the Darbar.

XX

Telegram to the Resident in Travancore and Cochin, dated the 24th May 1910.

XXI

Telegram from the Resident in Travancore and Cochin, dated the 25th May 1910.

XXII

Telegram from the Resident in Travancore and Cochin, dated the 28th May 1910.

XXIII

Letter—from R. C. C. Carr, Esq., I.C.S., Resident in Travancore and Cochin.
To—the Chief Secretary to Government.
Dated—Trivandrum, the 1st June 1910.
No.—R.O.C. 755.

With reference to endorsement No. 270-1, Political, dated 10th February last, and in continuation of my telegram dated the 28th ultimo, I have the honour to inform you that the Travancore Darbar accepts the draft rules for the working of the escape of the Periyár dam.

2. The Darbar officials, to whom intimation of the proposed opening of the shutters of the dam should be given as laid down in rule No. 1, are :—

(1) The Assistant Superintendent and Magistrate, Cardamom Hills, Peermad, and

(2) The Public Works Department Sub-Divisional Officer, Peermad.

3. In the matter of communicating messages regarding the opening of shutters, the Diwan observes that the telegraph offices at Peermad, Vandi Periyár and Kumili are not first-class offices and will not therefore be available for the transmission of messages at night. As there is no direct means of communication between Peermad and Vandi Periyár and the dam, messages will have to be telephoned to Kumili and thence telegraphed to Peermad. The Darbar therefore suggests that these three telegraph offices, viz., Peermad, Vandi Periyár and Kumili, be made first-class offices, so that they may be available for communication of messages at night as well by day.

4. I am not in a position to say what the suggested alteration would cost; but possibly special rules might be made to regulate the hours of business at these offices. Vandi Periyár is at the place where the road now crosses the Periyár river over a fine new bridge, but there is no village worthy of the name. The nearest estate is Munjamal where the Superintendent's bungalow is about two miles from the bridge. There are one or two native huts near the bridge, a rest-house and a few scattered buildings.

XXIV

Note by the Chief Engineer for Irrigation, dated 29th June 1910.

The above correspondence relates to an accident which took place at Vandi Periyár in 1907 on account of the surplus water let down from the Periyár lake. On the 28th October of that year circumstances, into which it is not necessary now to enter in detail, rendered it necessary for the safety of the dam to lower the lake level at short notice. The result was the sudden escape of a large volume of water into the Periyár river which caught unawares a number of carts near Vandi Periyár 6 miles below the Periyár dam and swept them away together with some loads of rice and tea.

2. The accident has given rise to the consideration of the following questions :—

(1) What steps should be taken to prevent, as far as possible, the recurrence of similar accidents and to diminish the risk of damage to life and property; and

(2) Whether any and if so, what compensation should be paid to the sufferers in this particular case.

3. As regards the first point a set of rules has been drafted for the proper working of the regulators and the passing off of surplus water. These rules were referred to the Darbar which has accepted them. The rules are appended to this note.

4. Steps have been taken to appoint a competent officer to superintend the working of the regulator.

5. The Darbar has suggested that arrangements be made to keep open, both day and night, the Telegraph offices at Vandi Periyár, Kumili and Peermad, to enable timely intimation being given of the raising of the shutters of the Periyár regulator to the officials of the Travancore Darbar. As there is no official stationed at Vandi Periyár, the Chief Engineer for Irrigation considers that there will be little use in sending a telegram to Vandi Periyár, but recommends that the Telegraph Department may be addressed so that arrangements may be made to keep the Telegraph offices at Peermad and Kumili open from 6 A.M. to 6 P.M. on all days from June to January. It is observed that there will be no use in keeping these Telegraph offices open during nights and that even if the telegrams were delivered, there would be no one to warn and no means of warning them if there were any one on the river banks.

6. The Darbar having accepted a compensation of Rs. 3,043 which this Government were in the conditions described in Official Memorandum No. 2068, dated 16th January 1910, prepared to give to the parties concerned as a matter of grace for losses sustained in the Travancore territory on account of the accident, the Examiner, Public Works Accounts, may be instructed to arrange for the payment of the amount to the Darbar, through the Accountant-General, Madras, and debit it against the grant made under the "Revenue Account" of the Periyár system.

C. A. Smith,
Chief Engineer for Irrigation.

Enclosure.

Draft rules for the working of the Periyár Regulator.

1. As soon as the level of the lake rises to + 150 the Dam Superintendent shall inform (1) the Assistant Superintendent and Magistrate, Cardamom Hills, Peermad and (2) the Sub-Division Officer of the Travancore Public Works Department, Peermad, that the river is liable to be in heavy floods at any moment.

2. The Dam Superintendent shall telegraph to the Assistant Superintendent and Magistrate, Cardamom Hills, and the Sub-Division Officer of the Travancore Public Works Deparment, Peermad, whenever it is necessary to open the regulator.

3. The regulator shall be opened, whenever the water-level rises above + 152 and to such an extent as will keep the lake from rising more than 3 inches above that level.

4. Under ordinary circumstances the gates shall be raised gradually 1 foot in the first hour, another foot in second hour and so on.

5. All gates shall, as a rule, be raised equally 1 foot at a time.

6. Should the water level in the lake rise to + 153 when the gates are being regulated as directed in rule 4 the shutters must be raised as rapidly as possible after regulator has been discharging with the vents open 1 foot for 1 hour and kept open until the lake falls to + 152.

7. When such sudden opening is necessary an urgent telegram shall be sent to the Assistant Superintendent and Magistrate, Cardamom Hills, and the Sub-Division Officer of the Travancore Public Works Department, Peermad, to say that dangerous floods are coming.

8. His Excellency the Governor in Council reserves the power to add to, or amend any or all of the rules, due notice of such amendment being furnished to the Darbar.

Order—No. 282 I., dated 3rd September 1910.

The draft rules for the working of the Periyár regulator which have been accepted by the Travancore Darbar are approved.

2. The Director-General of Telegraphs will be addressed (separately) so that arrangements may be made to keep open the Telegraph offices at Kumili and Peermad from 6 A.M. to 6 P.M. on all days between June and January as recommended in paragraph 5 of the note of the Chief Engineer for Irrigation.

3. The Examiner, Public Works Accounts, is requested to arrange for the payment of the amount of Rs. 3,043 referred to in paragraph 6 of the note by the Chief Engineer for Irrigation.

4. The Government presume that before disbursing to parties affected the sums now allotted as compensation the Darbar will obtain from each claimant a receipt accepting the sum in full satisfaction of all claims on this account.

(True Extract.)

C. A. SMITH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" " Public Works Department (with notes).
" Examiner, Public Works Accounts.
" Revenue Department.
" Political Department.
" Financial Department.
" Resident in Travancore and Cochin.

Forwarded to the

(By Order.)

Deputy Registrar.

PUBLIC WORKS DEPARTMENT (IRRIGATION BRANCH).

NOTES CONNECTED WITH G.O., No. 282 I., DATED 3RD SEPTEMBER 1910.

[SUBJECT.—*Overflow of water from the Periyár lake.*]

Previous papers :

G.O.,	542,	*Political,*	*25th May*	1886.
,,	1041	,,	*7th December*	,,
,,	550	*I.,*	*14th June*	1897.
,,	493,	*Political,*	*26th July*	,,
,,	584	*I.,*	*29th* ,,	1898.
,,	434-435	*I.,*	*12th April*	1902.
,,	420	*I.,*	*9th* ,,	1903.
,,	98	*I.,*	*1st February*	1904.
,,	306	*I.,*	*19th March*	,,
Letter	1125-1126	*I.,*	*13th October*	1904.
G.O.,	211	*I.,*	*24th February*	1905.
,,	929	*I.,*	*2nd October*	,,
,,	1020	*I.,*	*28th* ,,	,,
,,	1115	*I.,*	*15th November*	,,
,,	736	*I.,*	*5th July*	1906.
,,	907	*I.,*	*27th August*	,,
,,	1200	*I.,*	*22nd December*	,,
,,	445,	*Political,*	*4th September*	1907.
,,	25	*I.,*	*13th January*	1908.
Memo.	538	*I.,*	*3rd February*	,,
,,	2075-*C.,*		*26th March*	,,
,,	57-*O.,*		*25th May*	,,
,,	160-*O.,*		*2nd July*	,,

I

POLITICAL DEPARTMENT.

From the Resident in Travancore and Cochin, dated 8th November 1907, *R.O.C. No.* 2050.

The Resident in Travancore and Cochin reports that owing to the sudden raising of the sluice gates of the Periyár lake a large quantity of water overflowed and several carts and loads of tea and rice were washed away. One man was drowned while several had narrow escapes. If it is considered unnecessary to report the matter in this department to the Government of India with reference to that Government's orders contained in G.O., No. 223, Public, dated the 23rd February 1899, the Resident's letter may be transferred to the Public Works Department (Irrigation) for disposal. A further report is promised by the Resident.

E.K.G.—13-11-07.

V.S.M.—13-11-07.

Chief Secretary—

Submitted that no report need be made.

A. GALLETTI—13-11-07.

It is unnecessary to report to India, but Public Works department may be asked u. o. to tell us how this extraordinary flood was made to occur.

H. BRADLEY—13-11-07.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

In the B. form Progress Report for constructing a regulator at the site of the Periyár right bank escape the Superintending Engineer has remarked that report on the accident has been received and that the same has been dealt with separately.

2. In paragraph 5 of this office Memorandum No. 4436, dated 12th November 1907, the Superintending Engineer has been requested to submit at an early date a report on the floods.

Submitted that a copy of the Resident's letter may also be sent to him for a full report.

S. D.—15-11-07.

The Superintending Engineer's report may be awaited. This flood was the result of lowering the lake through the newly constructed regulators, water having been held up 8 feet higher than has ever been done before.

These regulators have been constructed (1) to give more efficient surplusing power, (2) to enable water to be held up to a higher level.

In the particular case in point the work not being fully complete it was found necessary in the interests of the safety of the dam to lower the water as rapidly as possible and it will most probably be possible in future to let down the surplus water more gradually but at the same time now that these new regulators are constructed floods of much greater intensity must be expected.

The only remedies I can suggest are—

(1) In future the regulators will be opened as gradually as the safety of the work will permit.

(2) Whenever the lake fills up to or near its raised F. T. L. notice can be sent to any named Travancore officials that the lake is full and may discharge at any time.

(3) The people who frequent the banks, must be warned of the danger of stopping near the edge at such times and at recognized fords a well defined line may be marked showing the height to which water is likely to rise.

The occurrence of this accident is deeply regretted and every care will be taken to minimize the danger of working the escapes in future.

H. E. Clerk—15-11-07.

Political Department.

May be returned to the Public Works Department (Irrigation) after perusal.

E.K.G.—18-11-07.

V.S.M.—18-11-07.

Chief Secretary—

A.G.—19-11-07.

The Resident must be informed of what it is proposed to do and Public Works Department asked to see that it is always done.

H.B.—20-11-07.

Will Public Works Department let us have copy of their orders when passed for communication to Resident?

A.G.—20-11-07.

Public Works Department (Irrigaion).

Under Secretary—

Orders are requested whether Superintending Engineer, VI Circle, may be asked to submit proposals to give effect to the Chief Engineer for Irrigation's suggestions 1 to 3.

S.D.—21-11-07.

Chief Engineer for Irrigation says the Superintending Engineer's report should be awaited.

T. W. S. Smyth—22-11-07.

POLITICAL DEPARTMENT.

II

From the Resident in Travancore and Cochin, dated 20th November 1907, R.O.C. No. 2050.

The foregoing is the further report from the Resident regarding the surplus water let out from the Periyár lake without previous warning and may be sent to the Public Works Department (Irrigation) for perusal.

2. The Resident suggests that a Telegraph office may be opened at Vandi Periyár where there is already a post office so that timely notice may be given of the letting down of water. The Government may acquiesce in this proposal and orders may issue to the Postmaster-General and Superintendent, Telegraphs, when this file is received back from the Public Works Department.

E.K.G.—28-11-07.

V.S.M.—28-11-07.

Chief Secretary—

A.G.—29-11-07.

Await return of file.

H.B.—30-11-07.

I am not sure Public Works Department meant to return the other file. They had better see Chief Secretary's note on this.

Public Works Department u.o. for perusal and return.

A.G.—2-12-07.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

The Resident's first report, dated 8th November 1907 is put up. The report called for in Memorandum No. 4436, dated 12th November 1907, is still awaited from the Superintending Engineer. This file and the connected papers may go back to Political, with the remark that action will be taken in the matter in the manner suggested in page 2 of the notes after receipt of Superintending Engineer's report.

2. It is a matter for consideration whether orders on the Resident's suggestion to open a combined Post and Telegraph office at Vandi Periyár may not be deferred, until after receipt of the Superintending Engineer's report.

I see now that it was in a B. Form progress report. H.E.C.

S.D.—6-12-07.

T.W.S.S.—6-12-07.

The opening of a telegraph station at Vandi Periyár is most desirable if arrangements can be made for guaranteeing the revenue the Telegraph department are sure to expect.

The report called for in the memorandum quoted above has nothing to do with the matter. The Superintending Engineer somewhere or somehow reported that he had heard of this accident and promised an official report. This has never come. Send Superintending Engineer an official memorandum calling for an immediate report on this accident and asking what rules he proposes to frame to prevent such accidents occurring in future.

H.E.C.—6-12-07.

Under Secretary—

Draft memorandum to Superintending Engineer, VI Circle, is submitted for approval.

S.D.—7-12-07.

T.W.S.S.—7-12-07.

[Memorandum No. 4926, dated 7th December 1907, to Superintending Engineer, VI Circle—**III.**]

Under Secretary—

The memorandum to Superintending Engineer, VI Circle, has issued. This file may go to Political for perusal.

S.D.—9-12-07.

T.W.S.S.—9-12-07.

POLITICAL DEPARTMENT.

May be perused and returned to the Public Works Department (Irrigation). It is submitted that orders regarding the opening of a Telegraph office may issue on receipt of the Irrigation order on this file. The Irrigation Department may be requested to send a copy of these notes to Political with their order.

E.K.G.—11-12-07.

V.S.M.—11-12-07.

A.G.—12-12-07.

Chief Secretary—

I don't fancy there will be any more danger until next south-west monsoon.

H.B.—13-12-07.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

This may lie over pending receipt of Superintending Engineer's reply to memorandum No. 4926, dated 7th December 1907.

S.D.—14-12-07.

Lie over

T.W.S.S.—16-12-07.

IV

From the Superintending Engineer, VI Circle, dated 14th December 1907, *No.* 6-*C.E.*

Under Secretary—

Referring to this Office No. 4926, dated 7th December 1907, the Superintending Engineer forwards copies of correspondence which has passed between him and the Executive Engineer, Madura, on the subject and states that he is unable to suggest any rules to prevent such accidents until he has completed his enquiries. He requests permission to confer with the Travancore authorities on the subject and wants to know the channel of communication.

Submitted that the papers may be forwarded to Political through Revenue with the request that the Resident in Travancore may be instructed to ascertain and communicate direct to the Superintending Engineer, VI Circle, the name and designation of the Travancore official with whom the Superintending Engineer may confer or correspond in regard to the arrangements to be made for preventing accidents of the kind in future.

Yes.
H.E.C.—18-12-07.

S.D.—17-12-07.

T.W.S.S.—17-12-07.

H.E.C.—18-12-07.

REVENUE DEPARTMENT.

Secretary—

D. T. CHADWICK—19-12-07.

Honourable Member—

Revenue may agree to direct correspondence between the Superintending Engineer, VI Circle, and the Resident with a view to prevention of *future* accidents.

2. Meanwhile shouldn't there be further enquiry as to the responsibility for *this* accident? The Planters' Association contemplate preferring claims for damages, and early steps to fix the facts seems therefore highly desirable. Somebody must, I submit, be liable for letting down, without warning, a flood 7 to 18 feet high. The last paragraph of the Superintending Engineer's Memorandum, dated 6th December 1907, seems very relevant.

A. G. CARDEW—19-12-07.

I think every one must agree with Mr. Medlicott's remark in his memorandum of 6th December 1907 that sluice Superintendent Johnson showed a lamentable want of common sense and ordinary caution. The sudden opening of four gates 6′ was an extraordinarily foolish thing to do.

2. The Resident should get inquiry made into the alleged losses. Such inquiry can only be made by the Travancore officials. This would be without prejudice or admission that Government is responsible for making good such losses. I think a telephone should be installed between the dam and Vandi Periyár. Is it needed to Thekkady? However a recurrence of this accident is not likely as both the dam officials and the people down the river have had a warning.

G. S[tokes]—21-12-07.

Political Department.

A draft official memorandum to the Resident in Travancore and Cochin is submitted. After issue the file may be returned to the Public Works Department.

E.K.G.—27-12-07.

V.S.M.—27-12-07.

Chief Secretary—

A.G.—28-12-07.

Issue.

H.B.—28-12-07.

[Issued as Official Memorandum No. 1929-3, dated 2nd January 1908-V.]

The official memorandum has issued. The file may now be returned to the Public Works Department (Irrigation).

E.K.G.—3-1-08.

V.S.M.—3-1-08.

A.G.—3-1-08.

Public Works Department (Irrigation).

Secretary—

This may lie over for the present.

S.D.—6-1-08.

H.E.C.—6-1-08.

VI

From the Superintending Engineer, VI Circle, dated 15th February 1908, No. 92-C.E.

Under Secretary—

The Superintending Engineer now submits a report of what was done by the Public Works Department officials before the accident together with proposals to prevent the occurrence of such accidents for the future.

2. He thinks that some blame attaches to Mr. Johnson for not giving notice before opening the shutters and for opening them rapidly. But considering that such accidents might occur on any mountain torrent, Mr. Medlicott states that it would be unjust to blame Mr. Johnson or anybody else but that the occurrence should be regarded as a "regrettable incident which at least will serve as a valuable piece of experience for the future."

3. The rules proposed by Mr. Medlicott for the prevention of such accidents are stated in paragraph 4 of his letter and are as follows :—

(*a*) That telegraphic notice must be sent to Vandi Periyár immediately on receipt of the order.

(*b*) That telegraphic notice must be sent to Vandi Periyár whenever it is necessary to open the regulator with or without orders.

(c) That when an order is received to lower the lake by a definite amount the Dam Superintendent will wire notice at once to Vandi Periyár and proceed to raise the gates 1 foot in the first hour, 2 feet in the second hour and so on.

(d) That all the gates must be equally raised—not more than 1 foot at a time.

(e) If the officer issuing the order, who presumably is acquainted with the rules, wishes to modify the standing rules in any particular instance he does so on his own responsibility and must wire full instructions and warnings of such modifications when he issues his order to the Dam Superintendent.

4. These rules do not appear to be self-sufficient It is not stated who should send telegraph notice to Vandi Periyár, who the officer at Vandi Periyár is, to whom the notice should be sent and who the officer is who should order that notice should be sent. Presumably the officer who should issue the order is the Executive Engineer, Madura, and the officer who should notify by telegram to Vandi Periyár is the Dam Superintendent at Periyár. The officer at Vandi Periyár to whom the notice should be sent has not been reported. This information should be supplied by the Superintending Engineer in communication with the British Resident.

5. It has to be considered whether, when the lake level is, say, + 148 and when the weather is monsoonish and water rising, it may not be advisable to warn Vandi Periyár of this fact and to say that water will be let down when the lake rises above + 152, a message being sent again when the regulators are opened.

6. In this Office Memo. No. 4926, dated 7th December 1907, it was suggested to the Superintending Engineer that at recognised fords a well defined line should be marked showing the height to which water is likely to rise. He has not offered any remarks on this point nor to the enquiry what private use would be made of a telegraph office at Vandi Periyár.

7. Regarding the opening of a telegraph office at Vandi Periyár, the Political Department noted that orders would issue on receipt of the Irrigation Order on this file. It is observed from paragraph 4 of the Superintending Engineer's letter that a telegraph office has already been opened at that place. There is telephone communication between Periyár, Thekkady and Kumili and it is believed that any notice telephoned by the Dam Superintendent at Periyár will be received by the Postmaster, Kumili, and telegraphed by him to any named Travancore official. In G.O., No. 25 I., dated 13th January 1908, a remuneration of Rs. 5 has been sanctioned for the Postmaster, Kumili, for receiving and transmitting telephone messages.

8. No intimation has been received from the Political Department as to whether the Resident in Travancore and Cochin has reported the result of the enquiry into the alleged losses by the flood ordered in Political Official Memorandum No. 1929–3, dated 2nd January 1908, at the instance of the Hon'ble Mr. Stokes.

For orders.

M.S.V.—4-3-08

S.D.—4-3-08.

G.O., 1125 I., 13th October 1904.

* Not printed.

The doubtful point about these proposed instructions is the possible insufficiency of the discharge allowed under rule (c) to keep water level below 152 or even below 157 which is the limit of safety—*vide* report accompanying Government Order sanctioning regulator. I find on working out a table * similar to table IV, page 53, Periyár blue book, that level 157·5 would have been exceeded, but very slightly. However in view of the excessive leakage reported to occur when water reaches 152 it seems unwise to allow it to reach 157. Under the suggested rule we do not get full power out of the regulator during the maximum flood ever recorded.

I would therefore add to rule (c) a proviso to the effect that should water rise to 153 the shutters must after the first hour be raised as rapidly as possible. One foot will give a discharge of 7,000 cusecs, enough to carry a warning to people below.

T.W.S.S.—5-3-08.

—14—

I do not accept Superintending Engineer's conclusion that we are responsible for the damage unless it is clear that the bandymen exercised reasonable care in halting where they did.

No definite instructions appear to have been given to the Dam Superintendent to open sluices slowly in order to give warning of the coming floods, nor was any intimation given to the Travancore authorities that more sudden floods might be expected in the Periyár as soon as the regulators came into play. This is what is required. That people should understand that at certain seasons the Periyár is a dangerous river and people who camp on the banks close to the margin do so at their peril. I do not think that the Dam Superintendent can be blamed for acting as he did.

I would suggest the following rules for guidance of the Dam Superintendent:—

* Here enter designation of official.
† Here enter any other places Travancore Government may wish.

(1) As soon as the lake level rises to + 150 the Dam Superintendent shall inform * . . . . . at Vandi Periyár and † . . . . . that the river is liable to be in heavy flood at any moment.

(2) The Dam Superintendent should telegraph to * . . . . . at Vandi Periyár whenever it is necessary to open the regulator.

(3) The regulator will be opened whenever water level rises above +152 and to such an extent as will keep the lake rising more than 3 inches above that level.

(4) Under ordinary circumstances the gates should be raised gradually one foot in the first hour, another one foot in the second hour and so on.

(5) All gates should as a rule be raised equally one foot at a time.

(6) Should the water level in the lake rise to + 153 when the gates are being regulated as directed in rule (4) the shutters must be raised as rapidly as possible after the regulator has been discharging with the vents open 1 foot for 1 hour, and kept open until the lake falls to + 152.

(7) When such sudden opening is necessary an urgent telegram should be sent to * . . . . . . at Vandi Periyár to say that dangerous floods are coming.

At the same time the Travancore authorities should let people understand the danger of halting in or near the river bed between June and January.

The above rules are for the Dam Superintendent; the Executive Engineer and Sub-Divisional Officer must of course have power to modify them on their own responsibility but it is not necessary to pu this into a rule.

H.E.C.—6-3-08.

POLITICAL DEPARTMENT.

The Irrigation Department apparently wants to know whether Political approves of the rules suggested in the Joint Secretary's note of the 6th instant and also perhaps wants a reminder sent to the Resident regarding the enquiry suggested in the latter part of Memorandum No. 1929-3, Political, dated 2nd January 1908.

For orders whether the Resident may be asked to say whether the proposed rules would be acceptable to the Darbar and also to report the result of the enquiry into the alleged losses by the flood.

V.S.M.—10-3-08.

I don't see that the Darbar need or should be consulted. It is a matter entirely for Public Works Department.

A.G.—11-3-08.

Chief Secretary—

Public Works Department may be told that the Resident has not yet answered the Official Memorandum No. 1929-3, dated 2nd January 1908. His reply will be sent to them as soon as it is received and he will now be reminded.

A.G.—11-3-08.

The Darbar must be consulted as to the rules, if for no other reason, because we want to know the places to which information should be sent. But over and above that they are interested in the

arrangements to pass off floods from the Periyár lake, just as we are for the passing of floods from the Betamangalam and other reservoirs down the Palar.

Remind the Resident.

J. N. ATKINSON—12-3-08.

Draft official memorandum to Resident submitted. It may be sent to Public Works department for acceptance.

V.S.M.—13-3-08.

A.G.—13-3-08.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

The official memorandum may be accepted.

S.D.—14-3-08.

Accepted.

T.W.S.S.—14-3-08.

POLITICAL DEPARTMENT.

Under Secretary—

For orders as to issue.

V.S.M.—16-3-08.

Chief Secretary—

A.G.—17-3-08.

Issue.

J.N.A.—18-3-08.

[Issued as Memorandum No. 423-2, dated 18th March 1908—**VII**.]

VIII

PUBLIC WORKS DEPARTMENT (IRRIGATION).

From the Superintending Engineer, VI Circle, dated 14th April 1908, No. 202 C.E.

Under Secretary—

In the Political department Official Memorandum No. 423-2, dated 18th March 1908, the Resident in Travancore and Cochin was requested to obtain the views of the Travancore Government on the set of rules suggested in page 6 of note file. The Resident forwarded a copy of the rules to the Superintending Engineer, VI Circle, and that officer has expressed approval. The reply from the Travancore Government may, it is submitted, be awaited and the file sent back to Political.

S.D.—29-4-08.

T.W.S.S.—11-5-08.

Yes.

C. A. SMITH—12-5-08.

POLITICAL DEPARTMENT.

To await Resident's reply to Memorandum No. 423-2, Political, dated 18th March 1908.

V.S.M.—14-5-08.

A.G.—15-5-08.

IX

From the Resident in Travancore and Cochin, dated 5th July 1908, R.C. No. 1141.

The file regarding the damage caused by the overflow of the Periyár lake is now being dealt with by the Irrigation department. The current may be sent *u.o.* to that department.

H.W.—14-7-08.

V.S.M.—14-7-08.

A.G.—14-7-08.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

In Political Official Memorandum No. 423–2, dated 18th March 1908, the Resident in Travancore and Cochin was requested to report upon the alleged losses in the Travancore territory caused by the overflow of the Periyár lake in October last. He was also requested to obtain the views of the Travancore Darbar on the rules suggested by the Chief Engineer on page 6 of the notes for the prevention of such accidents in future.

2. The Resident now reports that the losses sustained by the planters amount to Rs. 1,443 and by the Darbar Rs. 123. As these figures do not apparently include all the damages brought to notice before, the Resident has asked the Diwan to give him further information on the subject.

3. As regards the proposed rules, the Resident forwards an extract from a report of the Travancore Chief Engineer in which he states that the proposed rules could hardly obviate the danger that would result if all the escape regulators are opened simultaneously. It is reported that the construction of the new regulator and the demolition of the wall (with crest at the level of the old escape) in front of the old regulator involve material alteration in the conditions of the Periyár valley below and that the Darbar feels apprehensive for the safety of the inhabitants of the valley. The Travancore Chief Engineer is of opinion, and the Darbar agrees with him, that the new regulator should not be used, or if at all, not without affording adequate protection to life and property in the tracts of Travancore that would be prejudicially affected by the overflow of the water. He is also of opinion that the crest wall in front of the new lift shutters should be allowed to remain, so that if the shutters were raised, the condition of an open escape with crest level at R.L. 144 would still be maintained.

In his letter No. C/72, dated 19th April 1908, to Chief Engineer, the Travancore Chief Engineer objected to the removal of this wall, but he was informed in letter No. 57-O., dated 15th May 1908, that rules for the working of the regulator had already been referred to the Darbar through the Resident and that he would doubtless be consulted in the matter.

4. The Resident points out that the present attitude of the Darbar is quite at variance with that taken up by them when the escape regulator was under construction. It is reported that when Mr. Bastow visited the Periyár and examined the plans he expressed that he was "satisfied that the design is all that we could ask for, in fact the best and most up to date type of escape," and that the Diwan himself had withdrawn all objections to the execution of the work. The Resident states that he is drawing the attention of the Darbar to the above and that he will forward any further report on the subject that may be received from the Darbar. The receipt of this report may, it is submitted, be awaited.

> I think this must have been Mr. Minchin who acted for Mr. Bastow. The latter officer was on leave during the construction of the regulator.
>
> C.A.S.—24-7-08.

5. In the concluding portion of his letter the Resident suggests that a thoroughly trustworthy and competent officer shall always be on the spot to carry out the necessary regulation in times of flood. It is submitted that proposals for the appointment of a separate dam Superintendent with a high rate of salary are under consideration separately.

For orders.

G.V.—16-7-08.

B.G.R.—17-7-08.

The Resident may be informed that steps are being taken to appoint a well-paid responsible Superintendent. As regards the regulator it may be pointed out that the maximum discharge will not exceed 88,348 cusecs whereas previous to the construction of a reservoir a discharge of 127,000 cusecs was gauged and that it was calculated when the reservoir was originally designed with two escapes (one of which has never been built) that in order to dispose of this flood the discharge of the weirs would rise to 311 mills c.ft. in one hour or 86,400 c.ft. per second, so that the conditions are very slightly altered as regards high flood discharges from the original.

> Table IV, page 53 of Periyár Blue book.

T.W.S.S.—18-7-08.

I have drafted a letter to the Resident with a view to clearing up the matter. Will Under Secretary please see that the correct table is attached to the letter. I don't find it in this file. The one I want is the revised table showing the flood commencing when lake is at + 152·00 which is the worst possible case that can occur.

The file can then go to Political u.o. for acceptance of the draft.

C.A.S.—24-7-08.

POLITICAL DEPARTMENT.

It is not usual for Government to address the Resident in Travancore and Cochin by letter. But the proposed letter is to go from the Chief Engineer for Irrigation. The original communication was addressed by the Resident to the Political department. It would perhaps be better if Public Works department (Irrigation) sent the communication as an official memorandum through Political.

V.S.M.—29-7-08.

There is no reason why they should not. It is the usual practice of the Foreign department of the Government of India.

A.G.

Chief Secretary—

The draft may be accepted, but it might prevent confusion if it referred to the Resident's last letter and were sent out as from the Secretary to Government, Irrigation, rather than from the Chief Engineer.

A.G.—29-7-08.

I don't think it much matters. But if it goes from Secretary to Government, it must go as an official memorandum. Otherwise accepted.

J.N.A.—29-7-08.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

As the proposed draft letter is in reply to the Resident's letter addressed to the Chief Secretary, it is submitted that the draft letter may be converted into an official memorandum from the Joint Secretary. Please see the alterations made in paragraph 1 of the draft.

B.G.R.—31-7-08.

T.W.S.S.—3-8-08.

[Issued as Official Memorandum No. 137-O., dated 4th August 1908—X.]

XI

From the Resident in Travancore and Cochin, dated 16th April 1909, No. 1083.

Under Secretary—

In connection with the damages caused by the overflow of water from the Periyár lake in October 1907, the Resident in Travancore and Cochin was requested to move the Darbar to make an enquiry into the losses. It was distinctly stated that in making this enquiry, this Government assumed no responsibility for the losses caused by the accident. To prevent accidents of the kind in future, certain rules for the working of the escape regulator were drawn up and the Resident in Travancore and Cochin was requested to ascertain and report whether the Darbar had any objection to their issue.

2. In his letter R.C. No. 1141, dated 5th July 1908, the Resident reported that the losses sustained by the planters amounted to Rs. 1,442 and by the Darbar to Rs. 123. As the above figures did not include all the damages brought to notice before, it was stated that the Diwan had been asked to afford further information on the subject.

3. As regards the rules proposed for the working of the escape the Darbar took objection to them on the ground that the construction of the new regulator and the demolition of the wall in front of the old regulator involved material alterations in the conditions of the Periyár valley below.

4. In Official Memorandum No. 137-O., dated 4th August 1908, the objects of the new regulator as well as the way in which those objects were expected to be attained were explained in detail for the information of the Darbar and it was pointed out that the design of

the new regulator could not be said to be in any way more unfavourable to Travancore than that of the old escape and that the rules would be worked in such a way as to give no cause of anxiety.

5. In his letter quoted above, the Resident reports that the losses are estimated at Rs. 4,685 including the loss of a sum of Rs. 123 sustained by the Darbar and that this amount has been fairly estimated and may be taken as the total claim for losses due to the overflow of the water. He requests instructions as to whether any of the claims are to be admitted against this Government.

The enquiry was to be "without prejudice", but quite the same thing.
F. NOYCE—18-5-09.

From the Hon'ble Mr. (now Sir) G. Stokes' remarks, dated 21st December 1907, on page 4 of notes file and from Political Memorandum No. 1929, dated 2nd January 1908, it will be seen that this Government did not intend to assume any responsibility for the losses sustained. The Resident's attention may, it is submitted, be drawn to the above memorandum.

6. As regards the rules for the working of the regulator the Darbar requests permission to postpone their remarks till the return from leave at the end of this month of their permanent Chief Engineer Mr. Bastow. The permission asked for may be given.

For orders.

M.S.V.—12-5-09.

I think the request to the Travancore Darbar to enquire into the extent of the losses implies that this Government intended to pay reasonable compensation, else why make it?

The amount Rs. 4,685 would be a charge against the working expenses of the Periyár system.

T.W.S.S.—12-5-09.

I think it will be better to leave the question of damages to be settled after we have settled the rules.

It will be difficult to admit responsibility for these damages without rendering ourselves liable to future claims, and this will have to be carefully considered when the rules are finally drafted.

Apart from this possible difficulty it will very likely lead to further delay in getting the rules settled with the Darbar if we settle the question of damages first, more especially if we admit our responsibility, as the absence of rules accepted by the Darbar will be sure to lead to claims for damages every time the escape is opened.

C.A.S.—13-5-09.

REVENUE DEPARTMENT.

Under Secretary—

The proposal of the Public Works Department (Irrigation) to defer the consideration of the question of damages till the rules are finally settled may, it is submitted, be accepted in Revenue.

2. Mr. Bastow, the Chief Engineer of the Travancore State, whom the Darbar wish to consult about the rules proposed in Official Memorandum No. 423-2, dated 18th March 1908, will be returning from leave at the end of the current month, and the Travancore State can possibly let us have their views on the rules in a month or two thereafter.

3. The file may, it is submitted, be passed on to Political.

B.V.R.—15-5-09.

P.T.S.—15-5-09.

Secretary—

F. NOYCE—18-5-09.

It would appear that the tea, cardamoms and rice, in respect of which most of the damages are claimed, were in the carts which were overwhelmed in the flood. But I cannot find in the file any final finding as to where these carts were at the time of the accident. The Resident's letter No. 2050, dated 20th November 1907, says that they were "on both banks". The Executive Engineer's letter No. 838, dated 30th November 1907, says that they "had been left in the bed of the river, while the cartmen went to cook their food". Much, I think, turns on the question of fact here in dispute, for if the cartmen unyoked their oxen and left their carts in the bed of the

river, they may reasonably be held to have been guilty of contributory negligence. Before going further, will Public Works Department (Irrigation) kindly furnish definite information on the above point? It is better not to put it off longer than is necessary. I suggested enquiry 18 months ago.

A. G. Cardew—19-5-09.

Public Works Department (Irrigation).

Under Secretary—

Submitted.

2. Information on the point raised by the Revenue Secretary is not traceable. It is for orders whether a reference may be made to the Superintending Engineer. It would, however, seem that local revenue officers might be better able to gather the required information.

M.S.V.—27-5-09.

The Revenue Secretary's earlier note was taken to refer to fixing the responsibility of opening the shutters. It is, it is feared, unlikely that at this distance of time we shall get reliable witnesses as to the exact position of the carts; we can ask for the source of Mr. deChazal's information and whether it is trustworthy.

T.W.S.S.—27-5-09.

In consequence of Revenue Secretary's note on page 4, Official Memorandum No. 1929, dated 2nd January 1908, was issued to the Resident by Political asking him to move the Darbar to make enquiries into the losses but saying that Government assumed no responsibility for them. This enquiry appears to have been made and the result is given in Resident's No. 1083, dated 16th April 1909.

2. As regards the position of the carts I may explain that there was originally a timber bridge carrying the road from Kumili to Peermaad across the Periyár at Vandi Periyár. This bridge was washed away some years ago. I cannot now remember this date, but it was previous to 1901 and probably subsequent to 1896.

3. The traffic since then has crossed the Periyár close to the old bridge by means of ramps on either side. When the river is low enough the carts cross the bed and when water is deeper they are ferried across by what is locally known as a "Jungha", but what we call in the deltas a ballacut although it is of a different design.

4. Carts are in the habit of stopping on the ramps at different levels according to the depth of water in the river and they also stop there even when the river is quite low while the cartmen take their meals. It may be taken for granted I think that the cartmen were stopping low down on the river margin on October 28th, 1907, as the river on that date was probably almost empty. This would however be capable of verification.

Level of water in reservoir 157·00. $Q = 0{\cdot}9 \times 4 \times 36 \times 16 \sqrt{2g \times 1{\cdot}5} = 20{,}238$ cusecs.

5. If the statement of Mr. Johnson that only 4 vents of the regulator were opened, the discharge could not have exceeded 20,000 cusecs and was probably less on account of the barrier in front. The river at Vandi Periyár is about 300 feet wide as I was when in Travancore building the new bridge of 4 spans of 70 feet each.

6. I calculate roughly that this would give a depth of not less than 7 or 8 feet at the crossing but might possibly have been as much as 10 feet. It may, therefore, be taken for granted that the carts were within 10 feet of river bed and it may be pointed out that previous to the existence of the reservoir it is unlikely that cartmen would have dared to stop their carts so low down for fear of the sudden freshes to which the river was then liable, but I believe they then had a bridge. Since the construction of the dam freshes in the river have been few and far between and have risen gradually as long as the old flush escape was in existence. Cartmen have therefore ceased to consider the risk of floods and the sudden opening of the vents caught them unawares.

7. There is one item of the claim which seems inadmissible, *i.e.*, damage to nurseries at Arnakal estate as these must have been below M.F.L. and liable to damage even without the regulator.

I suggest that the file lie over till the further report promised by the Resident both as to damages and rules is received.

C.A.S.—28-5-09.

Revenue Department.

Under Secretary—

As it will probably take some time before the further report promised by the Resident is received, Public Works Department (Irrigation) may, it is submitted, be requested to have paragraph 4 of their note, dated 28th May 1909, verified.

B.V.R.—2-6-09.

P.T.S.—2-6-09.

Secretary—

F.N.—3-6-09.

There is no objection to the file lying over as proposed. Perhaps Public Works Department might meantime make the enquiry suggested above.

A.G.C.—4-6-09.

Public Works Department (Irrigation).

Under Secretary—

A draft memorandum to the Superintending Engineer is accordingly submitted for approval.

G.V.—12-6-09.

M.S.V.—12-6-09.

T.W.S.S.—12-6-09.

C.A.S.—13-6-09.

[Issued as Memorandum R.O.C. No. 85 O., dated 14th June 1909—**XII.**]

XIII

From the Resident in Travancore and Cochin, R.O.C. No. 1083, *dated 25th June* 1909.

Under Secretary—

In his letter R.O.C. No. 1083, dated 16th April 1909, the Resident in Travancore and Cochin estimated the losses caused by the sudden opening of the Periyár right bank escape regulator as follows:—

	RS.
(i) Travancore Tea Estates Company—Kolikanam estate—24 chests of tea containing 2,784 lb. at 8 annas per lb.	1,392
(ii) Arnakal estate—Damage to nurseries	50
(iii) Satharangapara estate—Damages to 5,460 lb. cardamom	1,365
(iv) Loss of carts, rice and other articles in the river.	1,755
(v) Loss to the Travancore Darbar	123
Total ..	4,685

What is tea selling at in England now?

C.A.S.—14-7-09.

From 6*d*. upwards 8 annas is reasonable.

T.W.S.S.—2-8-09.

The Resident stated that details of item (iv) would be furnished in due course.

2. With his letter noted above the Resident forwards details of items (iv) and (v) and also statements made before the Superintendent of the Cardamom Hills by Musavoonnam Rowthar, a trader at Vandi Periyár, Public Works Department maistry at Vandi Periyár and Public Works Department Storekeeper at Vandi Periyár.

3. The Resident recommends that items (i), (ii) and (v) may be accepted totally. As regards (iii) it is stated that the Superintendent of the Cardamom Hills does not think that the proprietors have any claim and believes that they are prepared to withdraw it. The Resident suggests that the claim may be disregarded. As regards item (iv) it is stated that the cartmen and merchants would

have preferred the claim long ago, had they known that there was any chance of the claims being recognised. The Resident is of opinion that all the details of the claim cannot be admitted, that all the carts may be valued at Rs. 40 and that claims for cart-hire, for commission, and for selling profits on articles lost should be excluded. With these exceptions, he considers that the claim may be admitted. If this is done, the claim in item (iv) is reduced from Rs. 1,755 to Rs. 1,528. The total claim recommended by the Resident is Rs. 3,093 as shown below :—

(i)	1,392
(ii)	50
(iii)	1,528
(v)	123
Total ..	3,093

But Chief Engineer for Irrigation has remarked in his note, dated 25th May 1909, that item (ii) amounting to Rs. 50 is inadmissible as the nurseries must have been below M.F.L. and liable to damage even without the regulator.

4. The consideration of the question of damages may lie over as in his note, dated 13th May 1909, Chief Engineer for Irrigation stated that it might be settled after the rules for the working of the regulator had been laid down. In paragraph 6 of his present letter the Resident states that the question of the Darbar's objections to the escape will be separately dealt with. He may be informed that his report on this subject is awaited. A draft official memorandum is submitted and may be sent to Revenue and Political Department for acceptance.

5. The Superintending Engineer, VI Circle, has been asked in Memorandum No. 85–O, dated 14th June 1909, to enquire and report where the carts that were carried away actually were on the day of the accident. His reply is awaited. It will be observed from the statements now submitted by the Resident that at the time of the accident the carts were "standing on both banks of the river".

G.V.—9-7-09.

M.S.V.—9-7-09.

For orders whether the question of paying for the losses may not be disposed of without awaiting for further information from the Superintending Engineer, VI Circle.

T.W.S.S.—10-7-09.

Draft cancelled.

Draft approved. See my paragraph 7, note file, as regards disposal of losses.

C.A.S.—14-7-09.

XIV

From the Resident in Travancore and Cochin, R.O.C. No. 1141/08, *dated 6th July* 1909.

Under Secretary—

With his letter noted above, the Resident in Travancore and Cochin forwards a letter from the Travancore's Chief Engineer (Mr. Bastow ?) setting forth his objections to the new Periyar Regulator. The objections are more or less the same as those already raised by the Darbar on the advice of Mr. Bastow and referred to in paragraph 3 of Mr. Davidson's letter, R.O.C. No. 1141/08, dated 5th July 1908. Briefly stated they are :—

(i) The regulator has been designed only from the point of view of a storage reservoir but the possibility of risk to the inhabitants of the valley has not been considered.

(ii) The regulator is in effect a dam holding up an enormous quantity of water at the head of an inhabited valley. But it is a comparatively flimsy structure. Earth tremors which would leave a masonry dam in tact would wreck the regulator.

(iii) The regulator is only a machine on the working of which depends the safety of the valley, a mistaken order or a careless or incapable subordinate might bring about a disaster.

(iv) The gates can be easily raised or lowered even by a child so much so that a mischievous person can throw them all open in a very short time.

On these considerations the Chief Engineer considers that rules however carefully devised will not meet the case.

The Darbar is said to agree with the views of its Chief Engineer.

2. In paragraph 5 of his letter No. 1141/08, dated 5th July 1908, Mr. Davidson, then Resident, brought to notice that the Darbar and its Chief Engineer who withdraw all objections to the regulator when it was under construction, subsequently changed their attitude and raised objections to it; and he stated that this change of attitude was being pointed out to the Darbar and that any further statement that might reach him on the subject would be submitted to Government in due course. With reference to this point, the Travancore Chief Engineer now states that he was over-hasty in approving of the regulator in 1905 but that this mistake had nothing to do with deciding the type of the regulator inasmuch as the design had already been fixed and work had been well advanced. He adds that "the British authorities having fixed on "the design without reference to the sarkar and having built the "regulator in the same way, cannot refuse to listen to the sarkar's "objection on the ground that the Sarkar Engineer carelessly "approveed of the work when under construction".

3. The Resident recommends that the rules framed for the working of the regulator must be rigidly enforced and thinks that if this is done the Chief Engineer's objections will in a great part be met.

4. It would seem that the Chief Engineer's objections do not carry much weight as his fears are mainly based on the supposed carelessness of officers who may be in charge of working the regulator. With efficient arrangements made for the working of the regulator, most of the objections must, it is thought, be sufficiently met. But the objections set forth cannot, however, be altogether ignored. Reference is, in this connection, requested to the Chief Secretary's (the Hon'ble Mr. Atkinson) note, dated 22nd May 1908, filed with the letter to the Travancore Chief Engineer No. 57-O, dated 25th May 1908. He says that there is nothing to prevent the Darbar from suing the Secretary of State in the Travancore Courts for damages caused in Travancore by the construction of the new regulator, and that great care is necessary to do nothing which would give the Darbar a valid ground of complaint or cause of action. The best course to adopt would therefore seems to be to admit* the claims for damages sustained by the floods of October 1907 and to try again to get the approval of the Darbar to the proposed rules for the working of the escape.

M.S.V.—22-7-09.

* To pay them perhaps but not admit liability.
T.W.S.S.

It is understood that the question of paying damages should be dropped.
S.S.—31-7-09.

They won't probably give formal approval lest they should thereby share the responsibility.
T.W.S.S.

There is absolutely nothing in the Travancore Chief Engineer's remarks that was not patent when the regulator was under construction. No further action seems necessary with regard to the regulator or the rules for its working except to ask the Resident to obtain an answer to his letter No. 2050, dated 28th March 1908, as regards the persons to be warned.

T.W.S.S.—22-7-09.

Yes and afterwards send to Revenue for perusal.

C.A.S.—26-7-09.

Under Secretary—

A draft memorandum to the Resident is submitted for approval and issue with the concurrence of the Political Department.

2. After the despatch of the memorandum, the file may be sent to the Revenue Department for perusal.

A.S.N.—30-7-09.

S.S.—31-7-09.

Apparently we are to await the report of the Superintending Engineer regarding damages.

T.W.S.S.—2-8-09.

REVENUE DEPARTMENT.

Under Secretary—

There are two points in this file—

(i) The question of the responsibility of this Government for the losses sustained in the Travancore State by the overflow of the Periyar lake, in October 1907.

On this point a report is due from the Superintending Engineer, VI Circle, to Official Memorandum No. 85–O, dated 14th June 1909, issued on the suggestion of this department.

(ii) Framing of rules for the working of the Periyar regulator for the prevention of accidents similar to what happened in October 1907.

A set of rules framed by this Government was sent with Official Memorandum No 423–2, dated 18th March 1908, to the Resident in Travancore and Cochin with a request to ascertain from the Darbar whether they have any objection to the rules. The Darbar's attitude towards these rules is noted upon in Public Works Department (Irrigation) office-note at pages 14 to 15 above. The Chief Engineer for Irrigation in the Travancore State, with whose views the Darbar are said to agree, objects to the use of the regulator but his fears are mainly based on the supposed carelessness of officers who may be in charge of the regulator. The Resident in Travancore and Cochin remarks "I submit that the rules now framed for working the regulator must be rigidly enforced. Provided this is done, the Chief Engineer's objections will in a great part be met." Public Works Department (Irrigation) consider that no further action is necessary with regard to the regulator or the rules for its working except reminding the Resident for an answer to the point raised in Official Memorandum No. 1929–3, dated 2nd January 1908, *viz.*, to ascertain and report the name and designation of the Travancore official with whom the Superintending Engineer, VI Circle, should confer or correspond in regard to the arrangements to be made for preventing accidents. Revenue may agree with Public Works Department (Irrigation) that no action is necessary for the present. Attention is invited to the note (recorded by the Honourable Member when he was Chief Secretary) at pages 4 to 6 of the notes to Memorandum No. 57–O, dated 25th May 1908.

P.T.S.—5-8-09.

Secretary—

No action seems necessary, I submit, till the Resident's and the Superintending Engineer's replies are received.

S. VENKATARAMADAS—6-8-09.

Perused and returned with thanks.

L. M. WYNCH—7-8-09.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

The draft official memorandum may be sent to the Political Department for acceptance.

G.V.—9-8-09.

M.S.V.—9-8-09.

T.W.S.S.—9-8-09.

POLITICAL DEPARTMENT.

Submitted that the draft official memorandum may be accepted in Political department.

H.W.—10-8-09.

V.S.M.—10-8-09.

Accepted.

A.G.—11-8-09.

Public Works Department (Irrigation).

Under Secretary—

The draft official memorandum will now issue.

G.V.—12-8-09.

M.S.V.—12-8-09.

T.W.S.S.—12-8-09.

C.A.S.—12-8-09.

[Issued as R.O.C. No. 49-O.-4/09, dated 14th August 1909—**XV.**]

XVI

From the Resident in Travancore and Cochin, dated 11th September 1909, R.O.C. No. 1141.

Joint Secretary—

The Resident reports that the Assistant Superintendent and Magistrate, Cardamom Hills, and the Public Works Department Sub-divisional Officer, Peermaad, have been nominated by the Darbar as the officials to whom warnings of floods should be sent (*vide* rule 1 of the proposed rules, page 6 note file).

The Superintending Engineer's reply to Ref. C. No. 85-O., dated 14th June 1909, has not yet been received. For orders if it may be awaited.

M.S.V.—25-9-09.

It was signed by me as Superintending Engineer, VI Circle, and may be expected immediately, it may be awaited.

H.E.C.—27-9-09.

XVII

From the Superintending Engineer, VI Circle, dated 19th September 1909, No. 772 C.E.

Under Secretary—

In reply to Memorandum R.O.C., No. 85-O., dated 14th June 1909, the Superintending Engineer forwards a report by the Executive Engineer (Mr. Brown) accompanied by a sketch showing the site of the disaster and three statements taken from the residents of the place.

It is stated that at the time of the accident, viz., 5-30 P.M. on the 28th October 1907, the carts were left on the river-bed while the bandymen had gone to cook their meals and that the statement of the Resident "that the carts were on both banks" might mean that they were accommodated on either side of the deep and narrow stream shown in the sketch.

In his note, dated 19th May 1909, the Revenue Secretary (Mr. Cardew) remarked that "if the cartmen unyoked their oxen and left their carts in the bed of the river they may reasonably be held to have been guilty of contributory negligence". But it would appear from the report now submitted by the Executive Engineer that the bed was made use of for a cart-stand on account of the low water just before the time of the disaster, and that there was no room for carts to stand anywhere else than in the bed.

The questions for the final settlement now are—

(1) Whether any compensation is to be paid for the losses sustained in the Travancore State by the overflow of the lake in October 1907.

(2) Whether the rules framed for the working of the regulator in view of preventing similar accidents may be formally approved and brought into force without regard to the objections of the Travancore Darbar.

The correspondence has been dragging on for the last two years.

M.S.V.—3-10-09.

J. M. Lacey—7-10-09.

The report of the Executive Engineer confirms the opinion which I expressed at page 11 of these notes and if it can be proved that the cartmen left their carts in the bed of the river this Government should disclaim all responsibility for damages. That the owners hardly expected compensation is shown in the Resident's letter.

I submit that this Government must be very careful how they accept liability for damages done by surplus from the Periyár lake. The Periyár river for some distance below the dam is, generally speaking, rendered immune from floods during eight or nine months of the year. There will therefore be a great temptation to extend cultivation on the margins of the river. It is possible that this has already taken place—*vide* the Resident's letter, No. 1141, dated 6th July 1909. It is probable that any ordinary flood not exceeding that which would have occurred had the reservoir never been constructed will in future give rise to loud complaints.

I think the Resident refers more to the probable increase in the population of the valley, but it is desirable to point out clearly to the Darbar that floods must and will continue in the future, and all that we should be liable for is for rendering sufficient warning down the valley.

C.A.S.—30-11-09.

The damages claimed are given at page 12 *ante*. Mr. Smith considered that item (ii) Damage to nurseries, Arnakal estates) was inadmissible. The total amount payable would be Rs. 1,515. I submit that this amount might be paid as an act of grace without admitting liability to damage. Attention is, however, called to Mr. Smith's remarks at page 10 of notes with regard to the desirability of getting the rules sanctioned before paying any compensation.

With regard to the acceptance of the rules by the Travancore Darbar, a disposal has to be made on the Resident's letter, R.O.C. No. 1148/08, dated 6th July 1909. Too much importance cannot be attached to the objections of the Travancore Chief Engineer. It will be sufficient if we inform the Travancore Darbar that the escape now erected is the most efficient that is at present known and that the rules for working it will be rigidly enforced.

H.E.C.—8-10-09.

Revenue Department.

Assistant Secretary—

The Travancore Chief Engineer's apprehensions which the Darbar apparently shares are that, although the present Engineers may be alive to the risk involved and give their unremitting attention to a rigid observance of the rules, it is possible that, their successors may relax a little or their subordinates may fail in their duty. These apprehensions seem unfounded and, as observed by the Resident, the Chief Engineer's objections will in a great part be met provided the rules are rigidly enforced. The rules may therefore be adopted.

S.V.R.—19-10-09.
L.M.W.—23-10-09.

2. It may be noted that the Assistant Superintendent and Magistrate, Cardamom Hills, and the Public Works Department Sub-Divisional-officer, Peermaad, are the officials nominated by the Darbar to whom previous intimation should be given of the opening of the shutters.

3. The liability of this Government for the damage caused by the surplus water let down on 27th October 1907 is a moot question. It is more or less an admitted fact that the Sluice Superintendent Mr. Johnson "displayed a lamentable want of common sense and ordinary caution" in *suddenly opening the sluices*. But it should be borne in mind "that October is one of the monsoon months, and that the inhabitants of Periyar valley should have expected a fresh down the river at any time" particulary when there were 3½ and 2½ inches of rain at Thekkady and Periyar between the 22nd and the 27th of October 1907. It should also be remembered "that before the construction of the reservoir the floods in the river used to come down more rapidly" and that the effect of the construction of the reservoir has been to reduce the flood discharge. There seems no proof that the quantity of surplus water that was let down on the date in question was any more than what would have flowed through the river without the reservoir in a monsoon month with a heavy rainfall. It is reported that "all the carts carried away by the floods were left in the bed of the river" and that the bandymen were busy preparing their meals. Under the conditions prevailing at the time the cartmen should have anticipated floods at any time and were clearly guilty of contributory negligence. In

2F

Please see the note below.
S.V.R.—19-10-09.

these circumstances it seems Government are not legally liable for the damage. The question merits careful consideration, because as observed by Mr. C. A. Smith "it will be difficult to admit responsibility for these damages without rendering ourselves liable to future claims" It would perhaps be desirable to consult the Advocate-General.

4. As regards the amount of damages, the original bill was for Rs. 4,685, comprised of the following items :—

		RS.
(i)	Travancore Tea Estates & Co. ..	1,392
(ii)	Damage to nurseries	50
(iii)	Damage to cardamoms	1,365
(iv)	Loss of carts, rice, etc.	1,755
(v)	Loss to the Darbar	123
	Total ..	4,685

S.V.R.—19-10-09.

The Superintendent of Cardamom Hills does not think that the proprietors' claim is valid and believes they are prepared to withdraw it. Mr. C. A. Smith considers that item (ii) is inadmissible as the nurseries must have been below M.F.L. The Resident values the carts at Rs. 40 and considers that claims on account of cart-hire, commission and merchants' profits should be disallowed. Item (iv) will then be reduced to Rs. 1,528 and the total amount will be Rs. 3,043. Mr. Clerk considers that the total amount payable would be Rs. 1,515. This amount is made up of items (i) and (v). Evidently he considers that item (iv) is totally inadmissible on the ground of contributory negligence on the part of the cartmen. He proposes that the amount should be paid as an act of grace without admitting liability to damages.

5. If Government are not prepared to admit their liability, there seems, it is submitted, no justification for paying any compensation.

P.T.S —17-10-09.

Secretary—

I am of opinion that there is contributory negligence on the part of the cartmen and that the claim on that account may be completely repudiated. It does not appear to me to be necessary to consult the Advocate-General on the subject. I shall examine the various claims below :—

L. M. WYNCH,
23-10-09.

As regards the loss to the Travancore Tea Estates & Co., I do not see why we should make any payment, as Mr. Clerk recommends, as a matter of grace. We should either admit or deny our liability. The same course should, I submit, be adopted in the case of the sum claimed by the Darbar as damages caused to a bridge. The Darbar have claimed the sum, though it is trifling, evidently to fight out a principle.

I submit that these claims, viz., claims (i) and (v), must be admitted, unless the Government are not willing to admit any liability in the matter. In regard to claim (iv) we may plead contributory negligence as stated by me above, though the Resident thinks that the claim may be admitted to the extent of Rs. 1,528. In any case it is worth while facing a suit, if it should come to it. Claim No. (ii) is inadmissible and claim No. (iii) will, it is stated, be withdrawn.

L.M.W.—23-10-09.

L.M.W.—23-10-09.

We may in this department agree to the course proposed in the last paragraph of the Chief Engineer's note at page 18 *supra*.

S. VENKATARAMADAS—19-10-09.

Honourable Member—

As regards the claim to damages I do not quite see how we can justifiably repudiate all liability at this late stage in the proceedings. The accident happened about the end of October 1907, and in December 1907 the Darbar were asked to inquire into the alleged losses and, although Government state that it was to be understood that they assumed no responsibility for the losses, the enquiry undoubtedly gave rise to expectations that compensation would be paid.

I do not understand on what grounds any differentiation can be made between claim (i) for loss of tea chests and claim (iv) loss of carts, rice, etc. The loads of tea were apparently in the carts or on the banks just where the rice and carts were, and if contributory negligence is to be taken as sufficient ground for requiring compensation for loss of rice and carts, it applies equally well to the tea.

The sketch at page 19 A paper under consideration shows where the carts and saman probably were, and it is argued that they would not have been left there in the rainy season in the days before the dam was built when the river was liable to sudden floods.

This is a mere matter of surmise. There was some water at the time in the deep bed, for it is said in the report at page 2 that some carts had crossed in the "jungar" (ballacut) and others were waiting to cross.

The cartmen according to their usual habits were no doubt taking the crossing very leisurely and very likely some of them were cooking food, some had gone off to cut grass, but all this scarcely amounts to my mind to contributory negligence. There is no doubt that the sluices at the dam were opened so suddenly and to such an extent that there was a very sudden and heavy flood which washed several carts away, and the question, as it seems to me, is, [illegible]e repudiate liability for damage due to want of care and forethought on the part of the Dam Superintendent on the ground that similar damage might have occurred had there been no dam and a sudden flood had come down the river and caught the bandymen similarly unprepared? That the river was formerly subject to sudden floods is no doubt true and the flood let down by the Dam Superintendent may have been no greater than any of those previously on record, but we have nothing to show that previous floods were equally sudden and overwhelming, and we cannot get away from the fact that there was no need for the Superintendent to have let out such a large or volume of water so suddenly.

I submit therefore that we should admit the claim for damages; but in doing so and in order to guard ourselves against future claims which Public Works Department (Irrigation) are apprehensive of, I think we should make it clear that the claim is only admitted on the ground of the suddenness with which the sluices were opened and the water let down; that in the days before the dam was built the river was liable to heavy floods, and that we will not admit hereafter any claims to flood damages where such floods are no greater than the former calculated discharge of the river in flood time, and provided that due care has been taken, as will be the case in future under the rules which Public Works Department propose to issue, that the flood is passed down gradually, not with a sudden rush as was unfortunately the case in the present instance.

Even if greater we should not admit liability as such an increase cannot be due to the works unless they fail.
C.A.S.—30-11-09.

As regards the amount of the claim to be admitted, I would allow claims (i) and (v) and (iv) as modified by the Resident.

Claim (ii) should be repudiated, as the nurseries were below F.S.L., in accordance with the principle which I have suggested should govern future cases. Claim (iii) may be ignored as suggested by the Resident.

The total amount payable will thus be Rs. 3,043.

The rules for working the regulator in future may also be accepted in this department and a reply sent to the Darbar with reference to its objections as proposed by Public Works Department (Irrigation) in the last paragraph of his note on page 16 *ante*.

L.M.W.—23-10-09.

The suggestion that the Madras Government should repudiate responsibility *in toto* seems to me monstrous. The sudden flood was admittedly caused by the action of a British Government official in suddenly opening the shutters, and the fact that he acted imprudently and dangerously in so doing has been admitted by the draft rules that have been proposed for future regulation of the raising of the shutters.

2. Nor could we possibly disclaim liability for future floods that may occur owing to the raising of the shutters. It is beside the point to say that before the construction of the Periyár lake there was a perennial liability for the Periyár river to come down in flood. Our obligation is entailed by the fact that for our own purposes we have profoundly modified pre-existing conditions, greatly reducing the ordinary flow of water in the Periyár river, but at the same time bringing about the certainty of occasional floods "of much greater intensity" than under natural conditions.

I must point out that the Honourable Member has not interpreted Mr. Clerk's noting quite correctly. If floods come when the lake is full they will have to be passed on with less moderation and may therefore be of greater intensity than before the escape was altered, but under no circumstances can they be of greater intensity than before the dam was built, *i.e.*, than under natural conditions unless of course the dam failed.

C.A.S.—9-11-09.

See Mr Clerk's note on page 2.

Please see page 11 note file, where I have calculated the flood discharge complained of at 20,000 cusecs as against 127,000, the main discharge in 1869, and 87,000 as calculated for the same flood after the dam was built.

C.A.S.—9-11-09.

3. As to the items of the claim, there is a consensus of opinion that items (i) and (v) should be admitted in full and I agree. In regard to item (ii), the Chief Engineer remarks that the nurseries "must have been below M.F.L. and liable to damage even without "the regulator". I don't know on what data Mr. Smith bases this statement of fact, but I will take it as correctly representing facts, and disallow this item.

4. Item (iii), the Resident says, is not seriously put forward. It also may be disallowed.

5. Item (iv) is the most disputed. Much has been said about the presumed contributory negligence on the part of the cartmen: but the facts on which such a presumption is based are purely conjectural. We have no evidence in support of the presumption, and the onus lies on us to produce it—an onus which at this distance of time it would be impossible to discharge.

But there is another reason which I think puts our plea of contributory negligence out of Court. The law is that "an act of one "party can only be contributory to the injury he complains of, if by "the exercise of ordinary care the other party could not have avoided "causing the injury" (I.L.R., 17 Mad., 368). But here admittedly the other party (*i.e.*, the British Government by its Agent the Sluice Superintendent) did not exercise ordinary care, but on the contrary "showed a lamentable want of common sense and ordinary caution." We cannot therefore ride off on any plea of contributory negligence. I would allow the Rs. 1,528 proposed by the Resident.

But surely if people make use of a river bed as a halting place they alone should be held responsible for the risks they run.

C. A. Smith.—30-11-09.

Hon'ble Mr. Stokes's note on pages 4 and 5 above.

Please see above. Why should we accept liability for accidents in the river bed?

C.A.S.—30-11-09.

6. The rules for the future management of the regulator are rather matter for Public Works department to settle in consultation with Political. The Resident seems to think that if rigidly enforced they will suffice: and I therefore have no objection to them. It will however lie on Public Works Department to see that they are enforced rigidly, and I am sceptical of the possibility of ensuring this. Further more I think Public Works department should consider whether there is any justification for the Travancore Chief Engineer's criticisms of the structure of the regulator. If there is a likelihood of the regulator giving way, it should be strengthened. It should in fact be made as safe as human skill can reasonably make it. If a disaster were to occur and if competent and impartial Engineers were then to say, after inspection of the plans, that the structure was not adequately strong, the Public Works department could not escape responsibility.

The plans have been examined and the masonry work has been found to be theoretically safe.

There are some defects in the shutters or rather in the fitting I believe, and arrangements are being made for setting this right.

C.A.S.—30-11-09.

7. Finally I would suggest for consideration in Political and Public Works departments, the question whether a convention might not be substituted for the lease-deed under which the Secretary of

State holds the area occupied by the Periyár lake and works—see my note in Chief Engineer's Memorandum No. 57-O, dated 25th May 1908.

J. N. A[TKINSON]—29-10-09.

L.M.W.—29-10-09.

Public Works Department (Irrigation) u.o.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

During construction there was a heavy flood in the Periyár when the river rose 10 feet in a few hours in 1891—Colonel Pennicuick's report should be available.

J.M.L.—5-11-09.

It is believed that there have been complaints about the diminution of floods in the Periyár near the coast and that this question is being dealt with by the Chief Engineer. The file may go to him for remarks.

H.E.C.—6-11-09.

Seen and returned with remarks.

C.A.S.—9-11-09.

This must have been in some other file as I cannot find it.
C.A.S.—9-11-09.

Please have the original design checked as suggested by Mr. Smith at page 21 of the notes.

H.E.C.—13-11-09.

The calculation should be separated from this file and put up with that concerning the shutters. It is sufficient to state here that the masonry part of the design is theoretically safe and require no strengthening.

We have now to deal with two questions—

(1) The acceptance of the rules by Travancore.

(2) The substitution of a convention for the lease.

Draft disposal of (1) herewith. (2) May wait till (1) is disposed of.

C.A.S.—30-11-09.

I have now drafted Chief Engineer's note and letter forwarding it to the Resident.

In doing so I have followed the principle enunciated by the Hon'ble Mr. Atkinson on page 21 *supra* that we cannot disclaim responsibility for damage done by future floods, but I respectfully beg to point out that it is not possible to guarantee that no damage will be done in the future even if the rules are rigidly followed and for the reasons stated in the Chief Engineer's note it may at any time be necessary to depart from the rules.

I submit therefore that it will be safer to omit that portion of the draft enclosed in blue pencil brackets.

If it is not considered desirable to send the draft as it stands with the omission of the above portion of paragraph 3 it would probably be better to omit paragraph 3 altogether, and leave the question of future responsibility to be discussed if and when necessity arises.

It is quite possible that no further complaints will be made, but there is a certain amount of risk of false claims being made on the strength of the admission of liability to which we shall commit ourselves as soon as we pay the present claim for compensation.

I am therefore very much averse to our doing anything which may put ourselves in the power of the Native State in the future, and I am therefore in favour of disclaiming responsibility by keeping in the first part of paragraph 3 and omitting the last part.

Will the Honourable Member also kindly refer to my marginal remarks against his note on page 21 *supra*.

C.A.S.—11-12-09.

REVENUE DEPARTMENT.

Assistant Secretary—

Submitted.

2. Nothing is stated either in the Chief Engineer for Irrigation's note or in the draft official memorandum as regards the payment of compensation for the losses sustained in the Travancore State by

the over-flow of the lake in October 1907, presumbly because Public Works department (Irrigation) desires to have the rules settled first.

B.V.R.—15-12-09.

P.T.S.—16-12-09.

Secretary—

It would perhaps be better if paragraph 3 were omitted altogether.

F.N.—21-12-09.

Honourable Member—

There appear to be two questions for decision. The first is whether this Government are prepared to pay any compensation for losses sustained by the overflow from the Periyár lake in October 1907, and if so, on what conditions; and the second whether the rules for the future working of the regulator should be again sent to the Travancore Darbar for acceptance.

2. As regards the first question, the Honourable Member has decided that compensation should be paid for for certain items included in the Darbar's claim. It does not appear necessary however that while consenting to compensate those who are injured by the flood of October 1907, we should admit a *legal* liability to do so. The draft official memorandum forwarded by the Public Works department (Irrigation) does not appear to deal at all with the proposed payment of compensation, while it contains references to future liability which perhaps would be best omitted. I would accordingly suggest that a paragraph should be substituted for paragraph 3 of the official memorandum, to the effect that while His Excellency the Governor in Council cannot admit any liability for losses caused by the flood of October 1907, he is prepared, as a matter of grace and entirely without prejudice, to reimburse the parties concerned to the extent already determined. Paragraph 3 of the Public Works official memorandum might then be omitted and no disclaimer of liability for future accidents will be necessary.

3. On the second question as regards the suitability of the ruels proposed for the working of the regulator, the Revenue department may, I submit, accept the opinion of the Public Works department. At the same time, the passage marked A in paragraph 3 of the Chief Engineer's note does not seem to be essential and might, I submit, just as well be left out.

A.G.C.—22-12-09.

With regard to Mr. Smith's marginal note on page 21, I may have misunderstood Mr. Clerk's meaning; but I still think that under the artificial conditions set up there is the risk of more sudden and perhaps heavier flood than under natural conditions. Under natural conditions the rain that fell in the catchment area would be held up and impeded by all the natural obstacles of vegetation and surface configuration and characteristics, reaching the river by the gradual trickle of innumerable streamlets. But as things now are, all this water is collected and impounded in the reservoir, until for the safety of the works it becomes necessary to let it off, when it is discharged more or less hurriedly, direct into the main river. The change effected, it seems to me, is not unlike that which has been caused by the draining of the moors in England and Scotland, the result, so far as the rivers that rise in the moors are concerned, being sudden and greater floods alternating with longer periods of lower water than was the case before the moors were drained.

2. As to the question of liability Government are liable for the acts of their servant when the acts are within the ordinary scope of the servant's duty. If rules are laid down to regulate the opening of the shutters on the escape, and the officer in charge disobeys the rules Government will not be responsible.

But the question of liability is so complicated, and so dependent on the facts of each case, that I agree that it would be inadvisable to make any general pronouncement on that subject. Paragraph 3 of the draft official memorandum had better therefore be omitted and in its place a paragraph substituted as proposed by the Revenue Secretary. I agree also with paragraph 3 of the Revenue Secretary's note.

3. It must, however, be clearly understood that though in these papers issuing from the office we make no admission of responsibility that does not absolve Government from legal liability; and that it is open to any one aggrieved by the action of Government or its agents acting within the scope of their authority, to sue Government in the courts of law.

J. N. A[tkinson]—23-12-09.
A.G.C.—24-12-09.

Public Works Department (Irrigation) u.o.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

Submitted.

K.P.A.—4-1-10.
S.S.—4-1-10.

J.M.L.—4-1-10.

Retype draft official memorandum and complete it and return to me *soon.*

C.A.S.—10-1-10.

Under Secretary—

Official memorandum typed and file resubmitted.

K.P.A.—11-1-10.
S.S.—11-1-10.

J.M.L.—11-1-10.

The draft official memorandum and Secretary's note have now been modified and the former is sent for acceptance.

C.A.S.—16-1-10.

REVENUE DEPARTMENT.

Assistant Secretary—

The draft official memorandum may, it is submitted, be accepted in Revenue.

B.V.R.—19-1-10.
P.T.S.—19-1-10.

Accepted in Revenue.

F.N.—20-1-10.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

For orders as to whether the draft official memorandum may now issue. It should perhaps be accepted by Political also.

K.P.A.—20-1-10.
S.S.—20-1-10.

As the official memorandum goes through Political they should, I think, accept the official memorandum before.

J.M.L.—21-1-10.

POLITICAL DEPARTMENT.

The draft official memorandum may, it is submitted, be accepted in Political.

P. de R.—25-1-10.
V.S.M.—25-1-10.

Chief Secretary—

May be accepted in Political.

J. W. Bhore—25-1-10.

Assistant Secretary—

Please prepare a short statement of the case for submission to His Excellency.

W. S. Meyer—26-1-10.

On the 28th October 1907 the Dam Superintendent, Periyár, opened some of the gates of the regulators in order to lower the level of the lake. The result was, the sudden escape of a large volume of water which caught unawares a number of carts near Vandi Periyár and swept them away together with some loads of rice and tea, besides doing damage to other property in Travancore Territory.

The questions which this accident has raised are—

(1) What steps should be taken to prevent, as far as possible, the recurrence of such incidents and to diminish the risk of danger to life and property.

(2) What is the extent of the liability, if any, which Government has incurred, to compensate sufferers in this particular case.

(i) In his memorandum, dated 6th December 1907, the Superintending Engineer Mr. Medlicott remarked that Sluice Superintendent Johnson showed a lamentable want of common sense and ordinary caution in suddenly opening four gates of the regulators 6 feet. The responsibility of this officer for the occurrence has been more or less accepted by all.

A set of rules has been drafted by the Public Works Department for the proper working of the regulators and the passing off of surplus water. The gist of these rules is that the Dam Superintendent should give telegraphic information to certain specified Travancore officials of the possibility of a flood when the lake level rises to + 150. With the level at + 152 the regulators should be opened gradually 1 foot in the first hour another foot in the next and so on, but intimation of the fact of opening should always be given. Should the lake level rise to + 153 the gates should be opened as rapidly as possible but urgent telegraphic warnings of impending dangerous floods, should, when this step becomes inevitable, be sent. These rules were referred to the Darbar whose views were requested on them. After some correspondence the Travancore Chief Engineer, apparently with the concurrence of the Darbar, wrote his letter of objection. His main objection is to the regulator itself, which he says is a comparatively flimsy structure easily liable to damage or collapse and that rules however carefully framed are useless if the staff are careless or incapable. In commenting on this, the Chief Engineer remarks, that the shutters are of the newest type and the masonry works have been specially designed to carry them. Even if the regulator were bodily carried away the maximum flood discharge would not be so great as the calculated maximum of 1869, *i.e.*, before the construction of the regulator. Finally, it is pointed out, that it is no argument against the rules themselves to urge that they are liable to be broken by a careless or incapable subordinate.

Vide Chief Engineer's note attached to draft official memorandum.

For these reasons it is proposed to again urge the Darbar to accept the draft rules.

(ii) On report of the damage caused by the flood the Resident was requested to furnish details of losses, though liability to pay compensation was specifically disclaimed by Government. After protracted enquiry he reported that the claims put forward were—

	RS.
(1) Travancore tea estates	1,392
(2) Damage to nurseries	50
(3) Damage to cardamoms	1,365
(4) Loss of carts, rice, etc.	1,755
(5) Loss to Darbar	123

On the question of the liability of Government to compensate sufferers, the Hon'ble Mr. Atkinson expressed the opinion that the flood having been caused by an act of negligence on the part of one of their servants (the Dam Superintendent) in the discharge of his duties), Government could not escape responsibility, but that in view of possible future complications, it would be best not to specifically admit legal liability while at the same time compensating the sufferers.

As regards actual compensation it is proposed to admit items (1) and (5) in full. The Resident states that (3) is not seriously urged and it is proposed to ignore the claim altogether. Item (2) is

also not admitted as the nurseries are said to be below M.F.L. and liable to damage even were there no regulator. Finally on the Resident's recommendation item (4) has been admitted to the extent of Rs. 1,528.

As stated in the draft it is proposed to pay compensation to this extent, as a matter of grace, while admitting no liability.

J.W.B.—27-1-10.

His Excellency the Governor—

The draft official memorandum may, I think, be accepted in Political. The foregoing note states the case.

W.S.M.—27-1-10.

Draft official memorandum approved.

A. L[awley]—28-1-10.

Public Works Department (Irrigation).

Under Secretary—

The draft official memorandum may now issue.

K.P.A.—1-2-10.

S.S.—1-2-10.

Is it not necessary to circulate this to the Hon'ble Mr. Hammick?

J.M.L.—3-2-10.

Under Secretary—

Please see rule 3 of the rules annexed to G.O., No. 928, Public, dated 24th November 1909. The case seems to be governed by clause (*b*) of this rule.

K.P.A.—3-2-10.

S.S.—4-2-10.

J.M.L.—4-2-10.

Secretary—

Draft may issue.

C.A.S.—7-2-10.

[Official Memorandum R.O.C. No. 2068 of 1909, dated 7th February 1910—**XVIII.**]

XIX

From the Resident in Travancore and Cochin, R.O.C. No. 1083/08, *dated 26th April* 1910.

Under Secretary—

Two matters were mentioned in memorandum R.O.C. No. 2068 of 1909, dated 7th February 1910, to the Resident in Travancore and Cochin—

(1) Draft rules, and
(2) Compensation.

The Resident's reply refers only to the latter and no mention is made of the former. It seems to be best to dispose of the whole matter in one Government Order. Orders are requested whether a draft may be prepared assuming that the draft rules proposed for the working of the escape are accepted by the Darbar or whether the Resident should be asked to report on this matter. In the latter case the following telegram may issue to the Resident—

> I suppose in R.O.C. 1141, 11th September 1909, the rules mentioned in page 4 paper under consideration, are practically approved of.
> J.M.L.—18-5-10.

A "Your R.O.C. No. 1083 of 1908, dated 26th April regarding overflow of water Periyar. Please state whether Darbar accepts proposed rules for working escape."

K.P.A.—12-5-10.

M.A.—12-5-10.

Secretary—

For orders.

J.M.L.—18-5-10.

The Travancore Darbar is doing exactly what I expected, *i.e.*, accepting the pecuniary compensation but ignoring the request to accept the proposed rules. I therefore repeat my recommendation made on page 11 *supra* that a reply should be extracted from the Darbar as to the rules before we pay the compensation. We shall never get it afterwards.

C.A.S.—19-5-10.

REVENUE DEPARTMENT.

Secretary—

Revenue may agree with Public Works Department (Irrigation) I submit.

F.N.—21-5-10.

I accept proposed telegram at **A** above.

A.G.C.—23-5-10.

PUBLIC WORKS DEPARTMENT (IRRIGATION).

Under Secretary—

The telegram above referred to will now be issued.

M.S.V.—24-5-10.

Secretary—

J.M.L.—24-5-10.
C.A.S.—24-5-10.

XX

[Telegram to the Resident in Travancore and Cochin, dated 24th May 1910.]

XXI

Telegram from the Resident in Travancore and Cochin, dated 25th May 1910.

Under Secretary—

Further communication from the Resident may be awaited.

M.S.V.—28-5-10.

Secretary—

Submitted.

J.M.L.—30-5-10.
C.A.S.—30-5-10.

XXII

Telegram from the Resident in Travancore and Cochin, dated 28th May 1910.

Under Secretary—

The Darbar is said to have accepted the rules. The letter from the Resident may be awaited.

M.S.V.—30-5-10.

Secretary—

J.M.L.—31-5-10.
C.A.S.—31-5-10.

XXIII

From the Resident in Travancore and Cochin, dated 1st June 1910, *R.O.C. No.* 755.

Under Secretary—

The Resident reports that the Travancore Darbar accept the draft rules proposed for the working of the Periyár right bank escape referred to on page 9. paper under consideration. The Darbar officers to whom the information referred to in rule 1 should

be supplied and the telegraphic information referred to in rules (2) and (7) should be sent, are reported to be (1) the Assistant Superintendent and Magistrate, Cardamom hills, Peermaad, and (2) the Public Works Department Sub-Divisional officer, Peermaad.

2. In respect of delivering telegraphic information, the Darbár suggests that the telegraph offices at Peermaad, Vandi Periyár and Kumili should be made first-class offices, so that they may be available for the transmission of messages both by day and night. With reference to this suggestion the Resident states "possibly special rules might be made to regulate the hours of business at these offices"

3. Before preparing a draft ordering the payment of compensation and approving of the rules, it seems necessary to come to a settlement as regards the above suggestion of the Darbar. At present there is telephonic connection from Periyár to Kumili *viâ* Thekadi—*vide* G.O., No. 736–I, dated 5th July 1906. Messages should therefore be telephoned to Kumili and thence telegraphed to Peermaad. Kumili, Peermaad and also Vandi Periyár have now telegraph offices which are open only from 10 A.M. to 5 P.M. except on holidays. Instead of making them first-class offices it is perhaps enough, if special arrangements are made to keep them open from 7. A.M. to 9 P.M. between June and October. If approved, Secretary may be asked to communicate with the Director of Telegraphs, Madras division, in the matter, as such questions are dealt with in his office.

June to January see page 16 paper under consideration.
C.A.S.—16-6-10.

4. It will be observed that all through the intention was that some Darbar officials at Vandi Periyár should be given telegraphic intimation; but the Darbar have now specified two officers in Peermaad only. The Resident states "Vandi Periyár is at the place where the road now crosses the Periyár river over a fine bridge, but there is no village worthy of the name. The nearest estate is Manjamal where the Superintendent's bungalow is about 2 miles from the bridge. There are one or two native huts near the village, a rest-house and a few scattered buildings". In these circumstances it is for consideration whether the telegraph office at Vandi Periyár may not be left out of account.

G.V.—14-6-10.

M.S.V.—14-6-10.

Secretary—

For orders. If there is no one at Vandi Periyár to receive thet warning, the necessity of sending a message there is not apparent.

J.M.L.—14-6-10.

As there is no official at Vandi Periyár, there is no use in sending a wire there as far as I can see. The Telegraph department may, I think, be addressed as to keeping the offices at Peermaad and Kumili open from 6 A.M. to 6 P.M.

I see no use in keeping them open at night as even if the telegram is delivered there will be no one to warn and no means of warning them if there were any one on the river banks.

There is no necessity to defer the settlement of the compensation for damage any longer and draft order is accordingly sent for acceptance.

C.A.S.—29-6-10.

Under Secretary— REVENUE DEPARTMENT.

The draft order may, it is submitted, be accepted in this department.

2. The Public Works Department (Irrigation) will presumably take further action with regard to the suggestion of the Honourable Member that the question of substituting a convention for the lease deed under which the Secretary of State holds the area occupied by the Periyár lake and works. Please see Chief Engineer's note, dated 30th November 1909 at page 22 above.

G.P.V.—1-7-10.

P.T.S.—1-7-10.

Secretary—

'Darbar" is neuter singular = a Court, and so should have "which" after it and singular verb.
A.G.C.

Revenue may accept the draft, I submit. "Which has" is, I think, more correct than "who have" in the case of a Darbar but Political will be able to advise Public Works Department on this point.

F.N.—2-7-10.

A clause or note should, I think, be added to the Government Order or to the rules setting forth that His Excellency the Governor in Council reserves the power to add to, cancel, or amend any or all of the rules, due notice of such amendment being furnished to the Darbar.

2. In rules 1, 2 and 7 for "Public Works Department Sub-Divisional officer, Peermaad," I would suggest the substitution of "the Sub-Divisional officer of the *Travancore* Public Works Department, Peermaad."

3. It might be well to add a paragraph to the Government Order saying that the Government presume that before disbursing to parties affected the sums now allotted as compensation, the Darbar will obtain from each claimant a receipt accepting the sum in full satisfaction of all claims on this account.

A.G.C.—4-7-10.

POLITICAL DEPARTMENT.

This file relates to the rules proposed for the working of the Periyár Regulator during floods and to the compensation to be paid to those who suffered loss by an accident which took place at Vandi Periyár in 1907 on account of the surplus water let down from the Periyár lake.

Resident's letters R.O.C. 1083/08, dated 26th April 1910 and R.O.C. 755, 1st June 1910.

2. The case was stated briefly in the Under Secretary's note, dated the 27th January 1910. That note and the subsequent notes in the notes file may be read. The Travancore Darbar has accepted the draft rules for the working of the regulator and the amount of compensation proposed (Rs. 3,043). A draft order is sent by Public Works Department (Irrigation) to Revenue, Political and Financial for acceptance.

3. It is submitted that the draft may be accepted in Political with the modifications suggested in Revenue.

V.S.M.—6-7-10.

Chief Secretary (through Financial).

J.W.B.—6-7-10.

FINANCIAL DEPARTMENT.

The case relates to an accident which took place near Vande Periyár (in Travancore State) in October 1907, by the letting down of surplus water from the Periyár Lake. Owing to heavy rains, it was found necessary for the safety of the dam to lower the level of the lake at short notice, and the result was that a large volume of water escaped into the Periyár river, and swept away a number of carts, laden with tea and rice, at Vande Periyár six miles below the dam, besides doing damage to other property in Travancore State.

2. In connection with this accident two questions have been considered:—

(i) The framing of rules for the future working of the regulator, and for giving warning to Travancore officials of the letting down of water from the lake.

(ii) The compensation, if any, payable to the sufferers in the present case.

3. *Rules.*—As regards (i), the Public Works Department have framed certain rules which, after protracted correspondence, the Travancore Darbar has accepted. These rules are appended to the Chief Engineer's (Irrigation) note (page 6 of the draft).

Submitted the rules may be accepted, subject to the modifications proposed by the Revenue Secretary in paragraphs 1 and 2 of his note, dated 4th July 1910, on page 26 *ante*.

4. *Compensation.*—As regards (ii), *i.e.*, compensation for loss of property in Travancore State, attention is solicited to the Hon'ble Mr. Atkinson's notes, dated 29th October 1909 and 23rd December 1909, on pages 19—20 and page 21 *ante*, in which the Honourable Member has held that the Government cannot disclaim liability, as the sudden flood was admittedly caused by the action of a British Government official, viz., the Dam Superintendent in suddenly opening the shutters, and that the Government are liable for the acts of their servants done in the discharge of their duties.

5. The losses originally reported by the Travancore Darbar amounted to Rs. 4,685, made up as follows:—

		RS.
(i)	Travancore Tea estates	1,392
(ii)	Arnakal estate, damage to nurseries ...	50
(iii)	Cardamom Hill Planters' Association ...	1,365
(iv)	Rice and other articles and carts ...	1,755
(v)	Loss to Darbar	123
	Total ...	4,685

Of these, item (ii) has been disallowed, as the nurseries are below M.F.L., and would have been damaged even without the regulator. Item (iii) was reported by the Resident not to have been put forward seriously and has therefore been disregarded. Item (iv) has been reduced to Rs. 1,528 by reducing the price of all carts to Rs. 40, and disallowing anticipated profits and commissions, and hire of carts. The damages thus reduced amount to Rs. 3,043. The Government, in Official Memorandum, No. 2068-09, dated 16th January 1910, disclaimed liability for the losses, but stated that they were prepared, as a matter of grace, and entirely without prejudice, to reimburse the parties concerned to the extent of Rs 3,043. The Travancore Darbar has accepted this amount as compensation. It is now proposed to pay this amount to the Travancore Darbar for distribution to the parties concerned, and to debit the charge to the head 42. IRRIGATION—MAJOR WORKS—WORKING EXPENSES—Periyár system.

6. The Revenue Department suggest the addition of a paragraph to the draft to the effect that the Government presume that the Darbar will, before disbursing the amounts to the parties concerned, take a receipt from each claimant, accepting the sum in full satisfaction of all the claims.

7. It is submitted that the draft may be accepted with the addition suggested by the Revenue Department, and referred to in paragraph 6 above.

T.A.S.—22-7-10.

A.H.—24-7-10.

Chief Secretary—

C. REILLY—25-7-10.

W.S.M.—26-7-10.

Public Works Department (Irrigation) u.o.

PUBLIC WORKS DEPARTMENT
(IRRIGATION BRANCH).

Under Secretary—

Why? The draft order may be sent to Public Works Department for acceptance with reference to paragraph 2 thereof.

M.S.V.—30-7-10.

Page 26 of of notes. Please revise rules and draft order as suggested by Revenue Secretary and return.

J.M.L.—4-8-10.

Under Secretary—

The rules and the draft order have been revised accordingly.

2. With reference to Under Secretary's query above in the margin attention is invited to paragraph 3 of this office note on page 25 notes file.

Public Works Department will have to address the Director-General of Telegraphs. Please see paragraph 2 of the draft Government Order.

B.G.R.—6-8-10.

S.S.—6-8-10.

Secretary—

Submitted.

Page 26 of notes page 30.

The rules and draft order have been revised as suggested by the Revenue Secretary and Financial. Draft order may now go to Public Works Department for acceptance.

J.M.L.—9-8-10.

C.A.S.—9-8-10.

To the Public Works Department u.o.

PUBLIC WORKS DEPARTMENT.

Under Secretary—

Paragraph 2 of the draft order may be accepted. For the words "in the General Branch" occurring in line 2, paragraph 2 of the draft, the word "separately" may be substituted.

P.K.S.—13-8-10.

Yes, the above modificatian is desirable.

P. HAWKINS.—16-8-10.

Public Works Department (Irrigation) u.o.

PUBLIC WORKS DEPARTMENT
(IRRIGATION BRANCH).

Under Secretary—

Paragraph 2 of the draft order has been amended accordingly. The file may now be circulated to His Excellency.

P.S.—17-8-10.

Secretary—

Submitted.

J.M.L.—18-8-10.

His Excellency—

The file relates to the accident at Vande Periyár due to the new Periyár escape. The case has been to His Excellency before—*vide* pages 22 and 23 notes file.

The draft order containing the final disposal of the case both as regards the payment of compensation and the rules for working the escape is now submitted for approval.

It has been accepted in Revenue and Political and Financial.

C.A.S.—15-8-10.

Draft order approved.

A. L[AWLEY]—19-8-10.

Under Secretary—

The draft order may now issue.

G.V.—22-8-10.

P.S.—22-8-10.

Secretary—

Submitted.

J.M.L.—24-8-10.

Issue.

C.A.S.—24-8-10.

[Issued as G.O., No. 282 I., dated 3rd September 1910.]

SUBJECT :— i. Draft rules for the future working of the Periyar Regulator during floods. ii. Compensation for damage caused by the floods in the Periyar Lake in Octr 1907 in the Travancore territory.

8647

CURRENT No.
PASSED ON BY
R. C.
C. R. C. 29-8-10
REF.
R. K.
D. O.

27

PUBLIC WORKS DEPARTMENT,
IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following

I	From the Resident in Travancore & Cochin R.O.C.No.2050/07,d/8-11-07	
II	do do do 23-11-07	
III	To the Supg.Engineer VI Circle No.4926,dated 7-12-07	
IV	From do do 6 C.E.,dated 14-12-07	3 C.P.
V	To the Resident in Travancore & Cochin No.1929-3 d/2-1-08	
VI	From the Supg.Engineer VI Circle No.92 C.E.dated 15-2-1908	5 C.P.
VII	To the Resident in Travancore & Cochin No.423-2 dated 18-3-08	
VIII	From the Supg.Engineer VI Circle No.202 C.E. dated 14-4-08	
IX	From the Resident in Travancore & Cochin R.O.C.No.1141/08,d/5-7-08	
X	To do do 137-0, d/4-8-08	
XI	From do do R.O.C.NO.1083 ,d/16-4-09	
XII	To the Supg Engineer VI Circle No.85-0,dated 14-6-09	
XIII	From the Resident in Travancore & Cochin R.O.C.NO.1083,d/25-6-09	
XIV	From do do 1141,d/6-7-09	
XV	To do do 49-10-4/09,d/14-8-09	
XVI	From do do 1141, dated 11-9-09	
XVII	From the Supg. Engineer VI Circle No 772 C.E. d/19-9-1909	
XVIII	To the Resident in Travancore & Cochin R.O.C.No.2068/09,d/16-1-10/7-2-10	
XIX	From do do 1083/08,d/26-4-1910	
XX	Telegram to do dated 24-5-1910	19 C.P.
XXI	" from do 25-5-1910	
XXII	do 28-5-10	
XXIII	From do R.O.C.No.755,dated 1-6-1910	20 P.

Ordinary Press
Print Notes

Note by the Chief Engr.for Irrign.

The above correspondence relates

2 to

to an accident which took place at Vande Periyar in 1907 on account of the surplus water let down from the Periyar lake. On the 28th October of that year circumstances, into which it is not necessary now to ~~describe~~ enter in detail, rendered it necessary for the safety of the dam to lower the lake level at short notice. The result was the sudden escape of a large volume of water into the Periyar river which caught unawares a number of carts nea Vande Periyar 6 miles below the Periyar dam and swept them away together with some loads of rice and tea ~~besides doing damage to other property in the Travancore territory~~.

2. The accident has given rise to the consideration of the following questions:-

(1) What steps should be taken to prevent, as far as possible, the recurrence of

227 29 3

similar accidents and to diminish the risk of damage to life and property; and

(2) Whether any and if so, what compensation should be paid to the sufferers in this particular case.

Paper VII on page 8 of P.U.C.

3. As regards the first point a set of rules ~~are~~ has been drafted for the proper working of the regulators and the passing off of surplus water. These rules were referred to the Darbar ~~who have~~ which has accepted them. The rules are appended to this note.

Paper XXIII on page 21 of P.U.C.

4. Steps have been taken to appoint a competent officer to superintend the working of the regulator.

Page 12 of P.U.C.

5. The Darbar ~~have~~ has suggested that arrangements be made to keep open

Pages 1 + 2 P.U.C

both day

4

~~future~~ day and night, the telegraph~~s~~ offices at Vande Periyar, Kumili and Peermad to enable timely intimation being given of the raising of the shutters ~~given~~ of the Periyar regulator to the officials of the Travancore Darbar. As there is no official stationed at Vande Periyar, the Chief Engr. for Irrgn. considers that there will be ~~no~~ little use in sending a ~~wire~~ telegram to Vande Periyar ~~and there~~, ~~and~~ but recommends that the Telegraph~~s~~ Dept. may be addressed ~~in view of~~ so that arrangements ~~being~~ may be made to keep the telegraph offices at Peermad and Kumili open from 6 A.M. to 6 P.M. on all days from June to January. It is observed that there will be no use in keeping ~~the~~ these Telegraph offices open~~ed~~ during nights ~~there~~ and that even if the telegram ~~be~~ were delivered, ~~the~~ there ~~will~~ would be no one to warn and no means of warning them if there were any one on the river banks.

5

6.5 24 P. 31 5

Page 21 of P.U.C.

Page 20 of P.U.C.

6. The Darbar having accepted a compensation of Rs.3,043 which this Government were in under the conditions described in O.M. 2060 of 16/1/10. prepared to give to the parties concerned as a matter of grace for losses sustained in the Travancore territory on account of the accident, the Examiner P.W. Accounts may be instructed to arrange for the payment of the amount to the Darbar through the Accountant General, Madras and debit it against the grant made under the "Revenue Account" of the Periyar system.

6

Draft rules for the working of the Periyar Regulator.

1. As soon as the level of the lake rises to +150 the Dam Supdt. shall inform (1) the Asst. Supdt. and Magistrate Cardamom Hills, Peermad and (2) ~~the Public Works Dept~~ the Sub Division officer of the Travancore Public Works Dept, Peermad that the river is liable to be in heavy floods at any moment.

2. The Dam Supdt. shall telegraph to the Asst. Supdt. & Magistrate Cardamom Hills and the ~~P.W.D.~~ Sub Division Officer of the Travancore Public Works Dept Peermad whenever it is necessary to open the regulator.

3. The regulator shall be opened, whenever the water level rises above +152 and to such an extent as will keep the lake from rising more than 3 inches above that level.

4. Under ordinary circumstances the gates shall be raised gradually 1 foot in the first hour another foot in the 2nd hour and so on.

5. All gates shall, as a rule, be raised equally 1 foot at a time.

6. Should the water level in the lake rise to +153 when the gates are being regulated as directed in rule 4 the shutters must be raised as rapidly as possible after regulator has been discharging with the vents open 1 foot for 1 hour and kept open until the lake falls to +152.

7. When such sudden opening is necessary an urgent telegram shall be sent to the Asst. Supdt. and Magistrate Cardamom Hills and the ~~P.W.D.~~ Sub Division Officer of the Travancore Public Works Dept, Peermad to say that dangerous floods are coming.

H. E. the Governor in Council reserves the power to add to, or amend any or all of the rules, due notice of such amendment being furnished to the Darbar.

26 D 7

ORDER. 282 I 7/3rd September 1910

The draft rules for the working of the Periyar ~~Night bank~~ regulator which have been accepted by the Travancore Darbar are approved.

~~2~~. His Excellency the Governor in Council reserves the power to add to cancel or amend any or ... of the rules due notice of such amendment being furnished to the Darbar

3. The Director General of Telegraphs will be addressed (in ~~the General~~ separately -- Branch) ~~in view of~~ so that arrangements ~~being~~ may be made to keep open the Telegraph offices at Kumili and Peermad from 6 A.M. to 6 P.M. on all days between June and January as recommended in para 5 of the note of the Chief Engr. for Irrgn.

4. The Government presume that before disbursing to parties affected the sums now allotted as compensation the Darbar will obtain from each claimant a receipt accepting the ~~same~~ in full satisfaction of all claims on this account.

5. The Examiner P.W.Accounts is requested to arrange for the payment ~~of~~ ~~the payment~~ of the amount of Rs 3,043 referred to in para 6 of the Note by the Chief Engr. for Irrgn.

19.8.10

Page 5 ante

To the Chief Engr. for Irrgn.
" " " P.W.D.
" ~~S.E. VI Circle~~
" Examiner P.W.Accounts in M/s Desp 3/9/10
" Revenue Dept.
" Political Dept.
" Financial Dept.
" The Resident in Travancore & Cochin in M/s Desp 6/9/10

Desp 28/10/10

Ordy. Press

29/6/10

D.S.

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